Engin.
brary

The Monthly Review of the AMERICAN ELECTROPLATERS' SOCIETY

CONTENTS

Editorial 89

Towner—A Talk to the Plater on Solution Analysis, also Complete Analysis of Nickel Solution 91

Butterworth—Metal Finishing Problems 107

Here and There 113

Branch News 118

Index to Advertisers 150

Membership Report 154

Buyer's Guide 160

Branch Directory 164

FEBRUARY 1940

Streamline

Your Cleaning Process

to Remove

S-M-U-T

with

FREDERICK GUMM CHEMICAL CO.
INCORPORATED
538 Forest St., Kearny, N. J.

Western Distributor
BELKE MFG. CO., 947 N. Cicero Ave.
Chicago, Ill.

The Monthly Review

Published by the AMERICAN ELECTROPLATERS' SOCIETY, Inc.

A Society for the Advancement of the Science of Electroplating

FEBRUARY 1940

W. J. R. KENNEDY
Editor

W. W. McCORD
Associate Editor

SUBSCRIPTION $3.00 A YEAR

Entered as second class matter at the Post Office at Springfield, Mass., September 8, 1930, under Act of August 24, 1912.

Acceptance for mailing at special rate of postage, provided for in section 1103, Act of February 28, 1925, authorized September 3, 1926.

Today's Demands for Efficiency and Economy Are Being Met with . . .

MEAKER
PLATING EQUIPMENT

●

★**MEAKER FULL AUTOMATICS**

Plating and
Processing
Machines
of All Types

★**MEAKER VARIABLE SPEED PLATING MACHINES**

★**MEAKER-ELECTRIC PRODUCTS GENERATORS**

Every piece of Meaker equipment is backed by over 38 years of hard-pan operating experience and practical engineering accomplishment.

●

THE MEAKER COMPANY

1629-41 S. 55th Avenue (Cicero Station), Chicago, Ill.

The MONTHLY REVIEW

Published by the
AMERICAN ELECTROPLATERS' SOCIETY, INC.

Publication and Editorial Office
93 Oak Grove Ave.
Springfield, Massachusetts

VOL. XXVII FEBRUARY 1940 NO. 2

Editorial

Since the Convention at Asbury Park last year, there has been more or less serious discussion about the election of honorary members to the Supreme Society. We have received several letters from members of different branches suggesting that the qualifications necessary for honorary membership be more clearly defined.

Article II, Section 3, of the constitution (1938) reads as follows: "Honorary membership shall be conferred by a majority vote of the Society in annual meeting upon those persons whose knowledge and service have added or will add to the welfare of the Society. Any branch society desirous of having any person elected to Honorary Membership in the Supreme Society shall submit the name of such with the necessary information to the Executive Board, a majority of which shall approve the application before presentation to the Supreme Society for election."

It seems to be the desire of our members that a clearer conception of honorary membership requirements be given, but so far no one has made any special recommendations other than those referred to in the section of the constitution just mentioned.

Under date of February 10, Grand Rapids Branch through its Secretary, Charles S. Whalley, wrote as follows: "Referring to Mr. Walter Weiker's letter in the October REVIEW, this branch also feels that in the matter of honorary membership undue emphasis has been placed upon the old age rather than on the other qualifications of proposed candidates."

We, therefore, propose that the following limitations be made to Part I, Article 2, Section 3, of the constitution: "The number of honorary members be limited to ten." Even with this limitation, we still feel that a clearer understanding of the requirements necessary should be forthcoming, for the guidance of the Executive Board in making recommendations and for the convention delegates in electing proposed candidates.

It is necessary that this matter be given some careful study as no doubt the question will come up frequently in the future, when a branch desires to have one of its outstanding members elected to Honorary Membership in the Supreme Society.

Plan now to attend the

Annual Milwaukee Branch Educational Session and Dinner Dance

April 6, 1940 at the

Schroeder Hotel

The following men have written papers for your approval:

"Patents in the Plating Industry" — Gustaf A. Soderberg

"Some Overlooked Problems in Electroplating" — George B. Hogaboom

Not Announced — W. J. Pinner

"Cost" — A. J. Hermansen

Remember the date April 6, 1940 and then attend.

ANNUAL SPRING MEETING of the Rochester Branch

to be held at the

Seneca Hotel, Rochester, N. Y.

on

Saturday, April 27, 1940

SPEAKERS

Mr. Frank Henry, Chemist of the Rochester Gas & Electric Corp. — His topic, "Water"

Dr. D. A. Cotton, Chief Chemist Delco-Remy Div. General Motors Co., Anderson, Ind. — Topic "Chromium Plating Dies and Gauges"

Mr. Raymond F. Yates, Vice-president Krome Alume Corp. — Topic "Plating of Aluminum and its Alloys According to the Krome-Alume Process."

A Talk *to the* Plater *on* Solution Analysis, *also* Complete Analysis *of* Nickel Solution

By MR. OWEN T. TOWNER
Superintendent of Finishing
Auto Sun Products Company
Cincinnati, Ohio

MY OPENING remarks are going to deal with some facts regarding chemical analysis of solutions, which are not always understood by the plater, and he sometimes has a great deal of trouble in this work owing to the fact that his knowledge of the fundamentals in chemistry is lacking.

My advice is for the plater to secure a chemical handbook, such as the Chemical Annual by Olsen, published by the Van Nostrand Company, of New York City, and also a copy of some first-year chemistry book that would be used by a chemistry class, and acquaint himself with the fundamentals of analysis, also chemical equivalents, equations, atomic weights, and the preparation of solutions of various normalities.

I am not a chemist, and what I do know about these problems I have acquired the hard way, by night study and long hours at experimental work. While it is true that what I am going to tell you here can be found in any book on this subject it is my thought that these instructions, put in this way, may help many of our members, as I know that the proper amount of attention has not been given the source of this information, or I would not be asked the questions that I have been asked by some of our members, the old as well as the young men. The facts contained here are the understanding of the first step toward making a success of any solution analysis.

There seems to be a lack of knowledge for full understanding of what is meant by some of the terms, and in reality we are taking some of our members through the equivalent of a two-year course in chemistry. It will be difficult to get the good out of that which is presented to you, unless you will try to acquaint yourself with the necessary knowledge so as to absorb the facts governing the procedure of analysis.

While we are giving you the method to be followed to determine the results of various tests, the accuracy of the results you obtain depends entirely on whether your knowledge of chemistry is sufficient to enable you to correctly make up your standard solutions from chemicals or analytical reagents.

The correct weighing out of chemicals is very important, so use nothing but distilled water or alcohol, as designated, in their making.

As an illustration: How could you expect to obtain the chloride content of a nickel solution by using tap water with a chlorine content to dissolve your standard reagent? It would be impossible to get the correct result in this manner.

Most analytical work in connection with plating is quantitative, for the purpose of determining whether the solution contains the desired amounts of one or more constituents and, if not, what changes in or additions to the solution should be made.

The methods of quantitative analysis may be classed as gravimetric or volumetric. Gravimetric methods consist in general in the formation, in the solution, of an insoluble precipitate containing the element to be determined, the removal of that precipitate by filtration, the washing of the precipitate to remove other compounds from it, and the drying or ignition of the precipitate to form a substance of definite weight and composition, from which weight the amount of the element in question may be calculated. In making an analysis which requires precipitation, it may be well to note here that where the element to be precipitated is present in small quantity, it may require as long as twenty-four hours to get a precipitation after your reagent has been added to sample. While some calculations in plating are carried on with this method and are rather lengthy and time consuming and entail some expensive equipment, most of the methods employed today are of the volumetric or titrating method, with indicators used in obtaining resulting end points and calculations by established factors which are reliable enough for the operation of cleaners—pickles and solutions in use in the electroplating process.

The simplest type of volumetric methods are those used in the determination of the amount of acid or alkali in a given solution. Such methods depend upon the neutralization of an acid by an alkali, or vice versa, using an appropriate indicator to determine

when they are present in equivalent amounts (which will be explained later in this paper).

The principal instruments required for volumetric analyses are:

2 50-c.c. burettes
2 5-c.c. pipettes
2 10-c.c. pipettes
1 10-c.c. graduated pipette
1 50-c.c. flask—Erlemeyer
2 100-c.c. flasks—Erlemeyer
2 200-c.c. flasks—Erlemeyer
2 sets of beakers from 100 c.c. to 1000 c.c.
1 hydrometer—Centigrade or Fahrenheit
1/2 doz. glass stirring rods.
1 burette stand and clamp
1 balance sensitive to 1/10 neg.
2 Bunsen burners B.T.U. 850
1 mortar and pestle for pulverizing reagents
1 palette knife
1 small tongs for handling hot glassware
2 50-c.c. graduate stands
1 spot plate
Bottles for reagents

Dessicators or covers for use in drying chemicals previous to weighing out. Asbestos screens for use over burners to rest glassware on, and many other little accessories which you will find use for as you proceed along with this work.

It probably would be best to eliminate the balance from your expense account and secure your prepared standards from a reliable chemist or pharmacist until you get acquainted with the routine methods of analysis and then try your own skill at making up these standards and compare your results with the reagents you buy, by titrating against them, and they will tell you just how far you have advanced in your knowledge gained from the study of the fundamentals. A pipette, which is used to measure samples of solution, is graduated to *deliver* the designated volume when it is filled up so that the lower edge of curve or meniscus is on the graduation mark, and when it is allowed to drain with the tip touching the side of the beaker. The *contents should not be blown out.* A burette is graduated to deliver the specified volumes when the solution is allowed to run out not faster than a certain rate, for which the burette is adjusted by the manufacturer. A graduated flask is calibrated to *hold* the specified volume when the lower edge of the curve or meniscus is on the graduation mark.

All volumetric apparatus or glassware should be and is calibrated for a definite temperature, usually either 15° C. (59° F.) or 20° C. (68° F.). For approximate work it is not necessary to

use the apparatus at exactly that temperature, but the standard solutions, and the sample to be analyzed, should be always measured at approximately the same temperature.

Thus a portion of warm plating solution should always be cooled to room temperature before the sample for analysis is measured.

One important condition in all volumetric analysis is to have the standard solutions of such strength that for a convenient sample of the plating solution (usually 5 c.c. to 10 c.c.) a reasonable volume of the standard solution will be required, preferably between 20 and 30 c.c. If too strong a solution is employed and only 5 c.c. is used in the titration, it is difficult to get approximately correct results, since the uncertainty of only 0.1 c.c. will cause an error of 2% or greater in the result. On the other hand, if too weak a solution is used and over 50 c.c. of the titrating solution are required, the burette must be refilled, and usually no greater accuracy is secured.

The use of a single primary standard for a number of volumetric solutions possesses a great advantage from the standpoint of simplicity and convenience and economy. Such a standard is a 0.1 N solution of silver nitrate. This is prepared by drying the salt in an oven at 110° C. for one hour and cooling in a dessicator.

Seventeen grams of the dry salt are weighed out, dissolved in distilled water and diluted to 1 liter by distilled water.

Another instance is an 0.1 N hydrochloric acid, which is prepared by taking approximately 9 c.c. of chemically pure hydrochloric acid and diluting to 1 liter with distilled water.

There are many other standard solutions used in the work of solution analysis which are in general use and can be used in different solution analyses. These can be made up in fair volume, say 250 to 500 c.c., and bottled, but it is false economy to make up a great amount of any hydroxyl standards as they deteriorate too quickly to maintain any degree of accuracy.

The amount of water (H_2O) contained in some reagents has to be previously dried out in the same method as used in the making up of silver nitrate standard before you can use it in making up a standard for analysis. To get the proper proportions and calculations regarding a chemical or reagent, it will be necessary to consult a chemical annual or handbook. That is why I stressed this point at the beginning, and it will take some study and concen-

tration on your part to gain the knowledge required to complete the understanding of what this is all about.

NOTES ON VOLUMETRIC ANALYSES

The instruments used for volumetric analysis are few and simple and the results obtained are in most instances correct, if care is taken to accurately prepare for the test to be made. This method has the advantage of enabling you to accurately determine the amount of one component of your solution while it may contain other ingredients.

When substances unite chemically the union always takes place in definite and invariable proportions. The substances will react with each other in these proportions only. For example when potassium hydroxide 2(KOH) C.P. and sulphuric acid (H_2SO_4) C.P. are mixed, potassium sulphate is formed, 112.2 parts of potassium hydroxide and 98.08 parts of sulphuric acid being required for complete neutralization. These two substances unite chemically in these proportions only. The equation is

$$2\ KOH + H_2SO_4 = K_2SO_4 + H_2O$$

In other words 112.2 parts of KOH will neutralize 98.08 parts of H_2SO_4 or vice versa.

Definite chemical compounds always contain the same elements in exactly the same proportions, the proportions being those of their atomic weights, or some multiple of these weights. Thus sodium chloride (NaCl) contains 23 parts of metallic sodium and 35.46 parts of chlorine, these being the atomic weights of sodium and chlorine respectively.

Potassium sulphate (K_2SO_4) contains twice 39.1 or 78.2 parts of potassium, 32.06 parts of sulphur and 4 times 16 or 64 parts of oxygen. Upon such facts the volumetric methods of analysis are based.

It has been shown that 98.08 grams of sulphuric acid will neutralize 112.2 grams of potassium hydroxide. It is therefore evident that if a solution of sulphuric acid be made containing 49.04 grams of the chemically pure acid in 1000 c.c., one c.c. of this solution will neutralize 0.05611 grams of potassium hydroxide. In estimating alkalis with this acid solution, the latter is added from a burette, in small portions or drops, until the alkali is neutralized, as shown by its reaction with some indicator, such as a few drops of phenolphthalein before adding acid to the alkali.

Each c.c. of the acid solution required before neutralization is complete indicates the equivalent of 0.05611 grams of KOH, and the number of c.cs. used multiplied by 0.05611 grams gives the quantity of pure KOH in the sample analyzed.

Any solution employed in volumetric analysis for the purpose of estimating the strength of substances, that is, any solution the chemical power of which has been determined, is designated a standard solution. It may be normal or decinormal, empirical or of any strength, as long as its strength is known. I am not including oxidizing or reduction agents, as the discussion of these is too lengthy to attempt here.

Normal solutions are those which contain in one liter (1000 c.c.), the molecular weight of the active reagent expressed in grams, and reduced to the valency corresponding to one atom of replaceable hydrogen or its equivalent. In other words, those which contain in 1000 c.c., in any given reaction, the chemical equivalent of one gram of hydrogen.

Decinormal solutions $\frac{N}{10}$ are one-tenth the strength of normal.

Centinormal solutions $\frac{N}{100}$ are one-hundredth the strength of normal.

Half-normal solutions $\frac{N}{2}$ are one-half the strength of normal.

Twice normal solutions $\frac{2}{N}$ are twice the strength of normal.

Empirical solutions. A solution which does not contain an exact atomic proportion of the reagent may be employed as a volumetric solution after its strength has been determined. Such a solution is said to be empirical and solutions of this sort are very frequently used. To prepare solutions of exactly normal strength is a tedious process and often inconvenient. If the solution is approximately normal, and its strength accurately determined, it may be used as is. This also is the case of standard solutions of the caustic alkalis, which, when not kept with all precautions, deteriorate readily through absorption of carbon dioxide from the air, as well as through their action upon glass containers. To restore their strength by the introduction of more of the alkali is an unnecessary waste of time, inasmuch as it is only necessary to determine its exact strength and then use it as it is. For instance, if an

approximately normal solution of potassium hydroxide is on hand, its strength is determined as follows:

Ten c.c. of an exactly normal acid solution are put in a beaker and after diluting with a little water and adding a few drops of methyl orange indicator, the empirical potassium hydroxide solution is run in from a burette until the color of the solution changes from red to yellow, the number of c.c. required is then noted. Assuming that 10.4 c.c. were required to neutralize the 10 c.c. of normal acid, then its strength is $\frac{100}{104}$ or 0.9615 that of a strictly normal solution and the number of c.c. used in any estimation must be multiplied by $\frac{100}{104}$ or 0.9615 and then by the normal factor for the substance analyzed.

It is a good plan to have the factor marked on the label of the bottle containing such an empirical solution. In this case it would be x 0.9615 normal.

In preparing volumetric solutions it must be borne in mind that most salts dissolved in water cause a condensation in volume, through reduction of temperature, while some substances, as for instance sulphuric acid and alkali hydroxides, cause a rise in temperature and a consequent increase in volume. It is therefore necessary after making a solution, to set it aside for a short time in order to allow it to attain the proper temperature before measuring it.

It is always the best plan to take a weighed quantity of the salt, slightly greater than that required by theory, and to dissolve it in less water than is needed for the finished solution. This solution is then titrated, its strength determined, and then diluted to the proper concentration.

After dilution it should be again carefully titrated and its final strength noted, and this should be plainly marked on the label of the container.

The following method of analysis of a nickel solution is very simple and each step of this method has been checked carefully by the writer, who has found it to be reliable, and has used it for years. You will find methods to determine most any element which is found in a nickel solution, either cold, hot, grey, or bright, and while there is enough material included in this paper to

govern most cases I am not attempting to give you complete analysis of bright nickels as others have their own methods, which are supplied by license to users. I have included the standardizing of NaCn in regard to nickel analysis, also the so-called "test solution" which is given in other metal tests of nickel, but I do not use it in this way. The methods noted are used as written, and no alterations are necessary to obtain results.

Metal Content of Nickel

1. Take a 5 c.c. sample of nickel solution. Place in 500 c.c. beaker.
2. Dilute to 50 c.c. with distilled water. Add crystals of tartaric acid.
3. Add 5 c.c. ammonium hydroxide.
4. Dilute to 200 c.c. with distilled water. Add Kl.
5. Titrate with .1 normal silver nitrate ($AgNO_3$) to a faint cloud.
6. Titrate with .1 normal sodium cyanide (NaCn) solution until clear. Add silver nitrate .1 normal ($AgNO_3$) again to a faint cloud then retitrate with .1 normal sodium cyanide (NaCn) solution until clear, stirring continually while titration is in progress, in all instances and this is your end point. Subtract the number of c.c. used of silver nitrate ($AgNO_3$ from the total c.c. of sodium cyanide (NaCn) used and multiply by .075 factor, which will give you the ounces per gallon of metallic nickel.

Silver nitrate ($AgNO_3$) 0.1 normal contains 17 grams to 1 liter distilled water.

Sodium cyanide (NaCn) 9.8 grams to 1 liter of distilled water.

The advantage of this method is that should you go past your end point, you can by this method obtain a correct reading, as you back titrate and your results will be accurate if you follow the procedure as written. There are other methods which give you results but in these if you pass your end point, you will have the disadvantage of starting all over again.

Standardization of Sodium Cyanide (NaCn)

Weigh out .2 grams of pure electrolytic nickel and place in a 250 c.c. flask.

Add 7 c.c. C.P. nitric acid and 5 c.c. C.P. sulphuric acid, and heat until nickel is dissolved and dense white fumes are evolved.

Cool, add 50 c.c. distilled water and then add ammonia until the solution turns blue.

Add 25 c.c. of nickel test solution.

Titrate with the standard sodium cyanide (NaCn) until the solution clears.

Your nickel factor equals weight of nickel dissolved times 13.4 divided by the c.c. of standard sodium cyanide solution used.

Nickel Test Solution Contains

160 grams, ammonium chloride
40 grams, tartaric acid
3 grams, potassium iodide
120 c.c. ammonium hydroxide
Distilled water to make 1 liter.

Standard Sodium Cyanide Contains

25 grams per liter sodium cyanide
1.7 grams per liter C.P. silver nitrate

Chlorides in Nickel Solution

Take a 5 c.c. sample of nickel solution.

Dilute to 50 c.c. with distilled water.

Add 1 c.c. of 2% potassium chromate.

Titrate with .1 normal silver nitrate solution to a faint buff or reddish brown color. This is the end point.

Factor for ammonium chloride—multiply by 0.143.

Factor of sodium chloride—multiply by 0.156.

Factor for nickel chloride — multiply by 0.317.

If you have both ammonium chloride and nickel chloride in solution it would be well to figure out result by both methods and divide by 2 for total chlorides approximately. Two per cent potassium chromate is prepared by 2 grams potassium chromate, 98 c.c. distilled water. One tenth (or 0.1) Normal silver nitrate is prepared with 17 grams silver nitrate to 1 liter of distilled water.

Boric Acid Content of Nickel Solution

Take 5 c.c. sample of nickel solution.

Add about 9 grams of manitol (pure).

Make paste — add 5 drops indicator solution, made of 1 gram of dry Brome Cresol purple and 2 grams of phenolphthalein to 100 c.c. methyl alcohol. Titrate with .2 normal sodium hydroxide

to purple end point. Multiply number of c.c. of titrating solution by 0.27 for ounces per gallon.

Sodium hydroxide solution of .2 or 2/10 N is prepared by 8 grams sodium hydroxide to 1 liter of distilled water.

Determination of Peroxide

Take a 100 c.c. sample of solution to be tested and place in a ground glass stoppered flask. Add 5 c.c. starch solution and 5 c.c. of 10% potassium iodide (KI) solution. Stopper flask and shake vigorously. If there is any hydrogen peroxide present in plating solution, the potassium iodide (KI) will be oxidized to free iodine, which in the presence of starch gives a typical deep blue color of iodo-starch.

A definite amount of the standard sodium thiosulphate ($Na_2S_2O_3 \cdot 5\ H_2O$) solution is added to the unknown solution, the glass stopper reinserted and again shaken vigorously. The sodium thiosulphate reduces the iodine to sodium iodide, and the color returns to the clear green of a nickel solution. If the solution is reoxidized by the air to the deep blue of the iodo-starch within 30 seconds, a greater amount of sodium thiosulphate is added. These additions are increased until the solution to be tested remains clear for 30 seconds.

The test then is not the total number of c.c. of sodium thiosulphate added, but the number of c.c. added at one time to cause the solution to remain clear for 30 seconds. For example — if after adding 3 c.c. of sodium thiosulphate standard, the solution turns blue in 15 seconds; if adding 4 more c.c. the solution turns blue in 20 seconds; and if upon adding 6 more c.c. the solution stays clear for 30 seconds, the reading is not 13 c.c. but 6 c.c.

Satisfactory results have been obtained on polish and buff nickel if the peroxide in the tanks tested between 3 c.c. and 8 c.c. Below 3 c.c. there is a tendency to pit, while above 8 c.c. there is a tendency for the nickel to darken, due to the oxidation of the plate.

The addition of 3 ozs. of 100 volume commerical peroxide, suitably diluted to 10 ozs. water to each 100 gals. of solution will bring the thiosulphate test to 5 c.c. This final value will decrease over the period of time because of the natural tendency for a peroxide to decompose. Heat, high current density, and agitation of the solution will increase the rate of decomposition. A test

should be taken as often as daily to insure constancy and prevent the chances of bad work.

Sodium Thiosulphate ($Na_2S_2O_3 \cdot 5\ H_2O$) .28 grams per liter.
Starch 4 grams per liter.
10% potassium iodide (KI) 107.6 grams per liter.

SURFACE TENSION TEST

(For control of wetting agents concentration)

The means of getting the result for this test, which is said to require a stalagmometer, can be determined by the use of a burette. This is primarily a test for viscosity or how thick or thin a liquid is or to give you a little clearer demonstration—when a wetting agent is added to a solution, it is like taking hard water, and adding soda to it to make it slippery between your fingers. This is the action of a wetting agent when you add it to your solution, in that it performs the same function in regard to your article to be plated, and also helps to free the hydrogen bubbles that form under electrolysis, and they slide off apparently and free themselves to rise to the surface.

Place water in your burette, and set the cock of burette so that it allows the drops to come forth at a rate at which you can count, and do so for one-half minute by stop watch, and record, then empty burette, *being careful not to change position of petcock.* Refill with nickel solution and repeat count in same way as above and record; now measure the density of your nickel solution with a hydrometer and record. Read value of surface tension of water at the temperature used from any chemical handbook.

The surface tension of nickel solution equals surface tension of distilled water from chemical handbook multiplied by drops of distilled water used, multiplied by density of nickel solution, divided by the number of drops of nickel solution. Your result will be in dynes.

Tables prepared by distributors of wetting agents show concentration of wetting agents for various values of surface tension, and about the average of concentration is 2 c.c. per gallon. There are other ways of finding surface tension by more expensive equipment, such as the Duy Nouy Surface Tension Apparatus, but the preceding method is accurate enough for normal operations.

pH TEST FOR NICKEL

(Range of 5.2 to 6.8)

There are many ways today for the recording of a pH reading of solutions. For instance pH papers electrometric method and colorimetric sets. The one which I shall describe I have found to be very reliable and easy to keep to standard, which is very close to readings of the electrometric system. It is one you can make and control its accuracy by renewing at a very low expense.

1. You first make up a standard solution of 10 grams of sodium phosphate, monobasic, and dilute to 1 liter and this is your buffer solution for one side.

2. Next you make up a standard solution of 1 gram of anhydrous sodium carbonate and dilute to 1 liter which is the buffer for the other side.

Next you procure twenty-four 10 c.c. bottles with corks which fit tightly and number the top of corks consecutively from 1 to 9. Then you run in 5 c.c. of No. 1 solution in each of the nine bottles. Drop one drop of Brome cresol purple in first bottle and place No. 1 cork in same, 2 drops of Brome cresol purple in next, and cork No. 2 and so on, until nine bottles are complete, and you will have nine different densities of yellow color. Repeat the same with nine more of the 10 c.c. bottles with the sodium carbonate No. 2 solution and this will give you a purple color in nine different shades.

Take a block of wood 12″x2″x3″ and on the two inch surface drill 22 opposite holes, 11 on each side. This can be finished to suit the user. This is your stock block, and you place the No. 1 bottle containing yellow in first hole on one side, and your No. 9 bottle containing purple opposite in other side, and continue in this sequence so that the numbers on the corks add up to ten points in each series of cross section.

Your next step is to make another block 4″x4″x4″ and drill a series of 9 holes, 3 sections of 3 holes in direct alignment, cross-sawed out through the alignment of 3 holes $1\frac{1}{4}$″x$\frac{1}{2}$″ rectangle so that you can hold up to light and get separate but absolute vision through each and no shadows from one to the other.

To use this set you use two bottles of distilled water in two center holes, and one set of two bottles from stock block on each side, reserving the three front spaces for the three samples of solution which are to be tested. The bottle of test solution in one

of the three of test solution should be marked by a file to the depth which will contain 5 c.c. of nickel solution and filled to this point with solution to be tested and 10 drops of Brome cresol purple indicator, and placed, after a light shaking, in the middle space in front of the two bottles of distilled water. The other two sample solution bottles are placed on each side.

You place a series of two bottles from the stock block — noting where you take them from as they should be marked on side of stock block in front of each two bottles —· starting with the series of 1 yellow and 9 purple as 5.2 and No. 2 yellow and No. 8 purple as 5.4 and so on, and compare until you get a close match which is your correct reading of pH of your nickel solution.

Brome cresol purple solution is made by dissolving 0.1 gram of dry Brome cresol purple in 150 c.c. of ethyl alcohol and diluting to 250 c.c. with distilled water.

LOW pH SOLUTIONS AND BRIGHT NICKEL SOLUTIONS

This same method can be applied, if you desire, for all ranges of pH in nickel solutions, using the same method, and changing of buffer solution and indicators for different ranges.

Range 1 to 3.2 pH

No. 1 stock solution acetic acid (glacial) 57.7 c.c. per liter.

No. 2 stock solution disodium phosphate 18 grams per liter.

Same procedure as given above, using methyl violet.

Range 3.1 to 4.8

Same stock solution as for range 1 to 3.2 using bromo-phenol blue.

Range 4.5 to 5.9

Same stock as previous two ranges, using methyl red.

Methyl violet is .02 grams dissolved in 100 c.c. ethyl alcohol and diluted to 250 c.c. with distilled water.

The same procedure is followed for Brome phenol blue and methyl red.

TEST FOR AMMONIA IN NICKEL SOLUTION

Take a 10 c.c. sample of solution dilute to 50 c.c. with distilled water, add 3 grams sodium hydroxide. Distill into a beaker containing 25 c.c. of 0.2 N hydrochloric acid. The unneutralized acid is then titrated with .02 N sodium hydroxide using methyl orange as an indicator.

Then subtract the number of c.c. of 0.2 N sodium hydroxide from the 25 c.c. of 0.2 hydrochloric acid your ammonia in solution neutralized.

One c.c. of 0.2 N Hcl is equal to 0.0034 grams of NH_3, and you used 10 c.c. of plating solution, so you would multiply the difference between the 25 c.c. of 0.2 NH_4Cl and c.c. of NaOH used in titration by 0.0034 grams which would give you the grams of NH_3, which when multiplied again by 100 would give you the grams per liter NH_3. Then multiply by 0.134 which would will equal the NH_3 per gallon.

No. 1. Gum Tragacanth.

Use the following — 10 c.c. sample dilute to 50 c.c. (These tests require the plating of metal before tests.)

Boiled with 10% potassium hydroxide solution yields a yellow stringy precipitate and a solution tinged with yellow. Determination is too lengthy to give here.

No. 2. Formaldehyde

Ten c.c. sample dilute to 50 c.c. To the aqueous solution, add sodium chloride and neutralize or make faintly acid with acetic acid, add a few drops of the reagent to the cold solution, and stir vigorously. If formaldehyde or any other aldehyde is present a precipitate will form. Filter off the precipitate and recrystallize from hot water or alcohol and determine the melting point. Dimethyl formaldehyde melts at 187° C. Refer to handbook. Reagent used in this test is 5 to 10% solution of dimethyl and dimethylhydroresorein.

No. 3. Formic Acid

Steam distill about 50 grams of the sample made acid with 15 c.c. of 20% phosphoric acid until about 200 c.c. of the distillate has been collected. Test the distillate for formaldehyde by the above test. If formaldehyde is absent, add to another portion of of the distillate 25% H_2SO_4 and some magnesium filings. The hydrogen produced will reduce the formic acid, if present, to formaldehyde which may then be detected by the above method.

Under the present-day method, cadmium, copper and iron can be removed from nickel by using high current density by the use of deadheads on cathode rods, and very few anodes in tank, and it is claimed that this method is very effective in removing any excess of these elements. There are methods of testing for their

presence in solution and I will endeavor to outline the methods of detection.

Cadmium in Nickel Solution

Cadmium content in a nickel solution as a brightener is determined visually by examination of plate. Bright hard deposit indicates too much cadmium, dull plate indicates too little cadmium.

Test for Copper in Nickel Solution

Take 10 c.c. sample, dilute to 100 c.c. with distilled water, add few drops 0.1 N potassium ferrocyanide $K_4Fe(CN)_6 \cdot 3\ H_2O$.

If copper is present, a reddish brown precipitate will form. If no copper is present the precipitate will be more of a white cloud variety.

Iron in Nickel Solution

Take a 10 c.c. sample, dilute to 100 c.c. with water, add 10 c.c. HNO_3, boil, let cool, add 15 c.c. NH_4OH, brown precipitate is iron hydroxide.

Cobalt in Nickel Solution

Take a 10 c.c. sample, dilute to 100 c.c. with distilled water. Add ammonia hydroxide until test solution turns blue. Add 0.1 N potassium ferrocyanide $K_4Fe(CN)_6 \cdot 3\ H_2O$. If cobalt is present the precipitate will be gray to green. If little is present, a greater amount of cobalt would be more green depending on amount present. If no cobalt is present, a light blue cloud would be present.

Test for Zinc in Nickel Solution

Take a 10 c.c. sample and dilute to 100 c.c. Add NaCn of varied strength until the precipitate which is formed is entirely dissolved, then add a saturated solution of sodium sulphide. If zinc is present, a white precipitate will form. If precipitate is black, add a little more NaCn to bring back to white color.

Test for Sulphate in Nickel Solution

This can be used for magnesium sulphate or sodium sulphate content by use of centrifuge. Make up standard of 5 ozs. nickel sulphate to 1 gal. Sulphate content of this solution should be 1/2 c.c. marking on 50 c.c. centrifuge tube. Subtract this amount from your reading for sulphate. Four ounces sodium sulphate per gallon would register 1 c.c. on same tube. The method is to take

25 c.c. sample of 5 oz. standard in one tube and 25 c.c. sample of plating solution in other tube. Add 2 c.c. of HCl to hold nickel in suspension. Then add saturated solution of barium chloride to 40 c.c. mark on tube. A white precipitate will result. Let stand for 15 minutes, then add saturated solution of barium chloride, and determine if precipitate is complete. Let stand in position for another 15 minutes and then centrifuge for one minute at rate of 60 turns per minute. Remove and read and calculate by above formula.

This can be accomplished by the use of two 50 c.c. stand graduates, under the same method, by permitting to stand over night and read the next morning, calculating by the same method.

STANDARD STEEL SPRING COMPANY
of Coraopolis, Pennsylvania
Has World's Largest Nickel Plating Tank.

The Standard Steel Spring Company has recently completed the largest nickel plating tank in the world. The operating volume of the new tank is 27,500 gallons. The tank is fabricated of 3.8 inch steel plate lined with 1.4 inch of rubber. The inside dimensions of the tank are: length 67 feet 7 inches; width 6 feet 10 inches; depth 8 feet 3 inches. The weight of the nickel anodes in the tank is 33,000 lbs. The total value of the solution and the anodes is about $26,000.00. The temperature of the solution is automatically controlled and the solution is continuously filtered. The connected generator capacity is 25,000 amperes at 6 volts. This tank is used in nickel plating automobile bumpers.

The Standard Steel Spring Company has also recently introduced a new pore-free coating, "Corronite." Data on this pore-free metallic coating will be made available for the first time at the Metal Show in Chicago, October 26-30. This coating greatly exceeds the corrosion resistance of present coatings and compares favorably in cost with present commercial coatings and thus will open up many new applications for tonnage steel.

NEWS ITEM

The Lea Mfg. Co. of Waterbury, Conn. announces the appointment of Edwin C. Jarm of Springfield, Mass., who has served the cutlery industry for the past ten years as development specialist for the Carborundum Co. Mr. Jarm will represent The Lea Mfg. Co. in sales and technical development, giving attention particularly to the cutlery trade and the application of the Lea Method of Finishing to this industry.

NEWS ITEM

The Consolidated Brush Corporation, 5 E. 17th St., New York City, has been acquired by the Hanson-Van Winkle-Munning Company, Matawan, N. J., manufacturers of electroplating equipment and supplies. Mr. Leo J. Springer, president of the brush corporation, has joined the Hanson-Van Winkle-Munning organization, and will specialize in the production of brushes, principally of the circular type. One of their important developments is a new and revolutionary design — a metal hub brush which will have wide applications in many types of scratch-brushing operations. Hanson-Van Winkle-Munning Company is installing extensive automatic equipment for producing these brushes.

WING YOUR WAY TO DAYTON, THE BIRTHPLACE OF AVIATION

Metal Finishing Problems

By L. C. BUTTERWORTH
Jamestown Finishing Products, Inc.
Jamestown, N. Y.

Presented before Rochester Branch on December 15, 1939

A METAL product may be highly satisfactory from the point of view of utility, but, under the present complex and competitive conditions of our industrial life, this is not enough. It must have a sales value which will place it into the user's hands, otherwise its purpose is lost.

Essential among the items which give it sales value is the surface appearance, and thus the finishing of metal products becomes a highly important factor in the total production and distribution sequence. Yet with all this the average manufacturer knows less about finishing than about any other link in his production chain.

Rust proofing is so closely identified with painting and enameling that it may in general be considered as a means of preparing metal for paint.

For many years the rusting of iron and steel was ignored as far as possible. The steel manufacturers themselves certainly did not want to call attention to it, and fabricators of metal products realized that any aroused public sentiment on the subject of rusting might have the effect of increasing the cost of production by forcing them to turn to non-rusting materials. So, ignoring as much as possible the fact that untreated steel might rust, paint was used in ample fashion. This was something like the popular fiction of the ostrich burying its head when in danger and thinking all would be well. As soon as scratches appeared in the paint, there was an opening for rust to start, and corrosion then spread under the paint film. Our best automobiles were subject to spreading corrosion if the surface was scratched or bruised. One result of the stock-taking period just after the war was the directing of public attention to the tremendous losses due to rust.

One of the chief causes of paint failure on any metal is dirt or impurities between the metal and paint film, such as, *oil*, *grease*, *alkali*, and other materials classified as dirt.

Therefore, the preparation of a metal surface on which a paint or enamel is to be applied is a vital factor in the life and service of

the coating, and the quality of the paint itself often may be of less importance in the final result than the quality of the surface coating.

Oil is one of the commonest materials found on sheet metal, as it forms part of the process at the mill, and is frequently left on for its preservative property. In the past, a thin coating of oil was not regarded seriously by metal finishers, but now, with the quick drying undercoats and enamels that are looked upon with increasing favor, thorough removal of this oil is necessary. Particularly so when synthetics are used. The proper application of paint to any metal product involves as a fundamental process, preparation of the metal surface to receive the paint.

Plain polished sheet steel is not of itself an ideal base for paint. Unlike wood, it lacks porosity to permit penetration and so, when untreated, paint for the most part will lie on the smooth glasslike surface, and no matter how adherent it may seem when applied the bond is not secure.

In addition to this lack of bond, the smooth steel surface presents another disadvantage as a base for painting, because with the admission of moisture to the metal through any cause, either through porosity of the paint film or abrasion of the coating, a condition favorable to corrosion develops and, once started, tends to spread. The outward sign may be a tiny spot of rust, but a pernicious activity may be set up under the paint film and, if allowed to progress, whole sections of the coating will become detached.

There are two important qualities to be sought in correcting this corrosion:

1. Etching or roughing of the surface, to provide a foothold or bond for the paint.
2. Surface insulating, to prevent electrochemical development of alkali

Both of these objectives may be attained in a single operation between the cleaning and finishing of the metal. One method is to create a phosphate coating which gives greater adhesion and at the same time arrests the flow of an electrical current from one point to another. Even though rust itself tends to loosen a paint film, the alkali formed as the result of the corrosion of metal is more pernicious and causes more pronounced loosening of the paint than does rust itself. If the film is firmly bonded to a surface,

such as a steel plate, the moisture may pass through, but until the bond is broken, no moisture can accumulate between the film and the paint. This is called breathing of the paint film and is often used to advantage. There is not sufficient physical space for such an accumulation, therefore a molecule or group of molecules of water which advances as far as the plate may begin a return journey, it may be interrupted or even reversed by variation of *atmosphere*, *temperature*, *pressure*, and *humidity*.

With a baked enamel finish, the amount of air and moisture held within the coating is relatively small. Iron and steel have an electrolytic pressure, which acts in effect just as though each atom of metallic iron had a tiny spring beneath it. Moisture or water serves to loosen the catch which keeps the iron atom from being projected outward. The released atom of iron carries with it a minute electric charge. Since this electric charge was derived from the body of the steel, it must return to the steel in order to restore a state of equilibrium.

The ion of iron, after giving up the charge of electricity to the moisture laden medium, into which it was projected, must itself, as an atom, enter into chemical combination with dissolved salts, or it must decompose the molecule of water held within the paint film and combine with them to form ferrous hydrate and then trouble starts. Giving up the electric charge and entering of the iron atom into chemical combination occurs simultaneously. The electric charge then must find its way back to the steel surface. The path of the returning charge, now borne by a hydrogen ion, may be long or short, usually at a point removed from the area from which the ion with its charge came away.

What is the best process of cleaning, rustproofing and insulating steel? There can be no simple answer to this question, because different articles and different uses call for different processes. There are a number of methods in use today, such as, galvanizing, sherardizing, zinc plating, cadmium plating, copper plating, parkerizing, Parcolite and bonderizing.

Bonderizing is a method of changing the surface characteristics by immersing into a chemical solution and produces a very good surface for painting.

Another problem which we have to deal with is mill scale. One of the reasons that the descaling process has been slow to become

an established science is that the scale coatings are not uniform in thickness or in the tenacity with which they adhere to the base metal. Scales are usually iron oxide and are classified under three headings:

1. Hydrated Ferric Oxide. This is ordinary brown rust and is soluble in dilute acids.
2. Anhydrous Ferric Oxide. This is the blue scale on heat-treated parts. It is somewhat insoluble.
3. Magnetic Oxide of Iron. This is the black scale formed in hot working operations. It is only slightly soluble.

There are three general methods of removing scale.

1. Friction abrasion.
2. Chemical reaction with the base metal or pickling.
3. Electrochemical scale separation.

Pickling, in simplest terms, may be described as immersion of metal in diluted acid solution to remove scale and rust. Roughened or blackened surface will result if great care is not used in pickling.

ADHESION

Important is the adhesion of the film to the underlying surface. Important, too, are the structure and gloss of films and their mechanical properties, which in turn are influenced by solvent retention within the surface coatings.

There are two types of adhesion which are of interest in the case of paint.

1. Mechanical adhesion which is dependent on penetration of the paint into the surface, and
2. The sort of adhesion which is due to molecular attraction and governed by molecular structure.

On smooth nonporous surfaces a peculiar type of adhesive power is active which strongly attracts polar groups in the vehicle, such as carboxyl or hydroxyl groups. It has been shown experimentally that the polar molecules of surface coating lie flat on the surface of the support and are anchored by their ends.

Mechanical film properties such as tensile strength and distensibility are deciding factors in the performance of surface coatings, but their influence is largely modified by forces of adhesion. This is the theory advanced by one of our large synthetic resin manufacturers and eventually may solve many of our finishing problems.

Therefore, on the basis of our present knowledge, it may be safely stated that a merely chemical approach to paint problems is entirely wrong and that the physical problems involved deserve at least as much, if not more, attention than the chemical problems.

FINISHING ROOM CONTROL

We consider finishing room control very important in successful production operation. What we mean by finishing room control includes material control, control of viscosities, mixing control, fluid pressure control, air supply and control, film thickness, spray equipment, exhaust, replacement of air, temperature control. Let us consider viscosity.

Each material has a certain viscosity, which is considered as the best point of flow at a given temperature. If the material is thinned too much, its hiding power will reduce, or it may have a tendency to run or sag, consequently the best possible control should be set up to hold materials at their proper viscosity.

In the application of synthetic enamels, if the proper thinner is not used, the finish may have a sandy appearance. Poor grinding is blamed for this, but the real facts are that if the proper thinner had been used, a precipitation would not have taken place and the material would have flowed out smoothly.

When finishing materials are applied by hand spray, the man behind the gun is an important factor. Spray operators may be compared to artists, we have good and bad. Several spray operators all using the same material and tools, spray differently, and each man may have certain abilities not found in others. Therefore, with the same material and on the same kind of work, day after day, he will vary his film thickness. Control will correct this.

There are three factors which cause considerable trouble in the finishing room, humidity, temperature, and circulation of air.

Very few plants are in a position to control humidity in their finishing and drying rooms, but temperature and air circulation may be controlled within reasonable limits.

Free circulation of air in a finishing, drying room or oven is necessary in order to efficiently carry away the volatile thinners as they evaporate. In other words, poor circulation means the

air will become saturated with foul vapors and refuse to absorb more, thereby retarding the drying.

Information desired by a formulating chemist:

Air drying or baking.
If air-drying, time allowed before handling and packing.
If baking, time and temperature, type of oven and heat used.
Product on which it is used.
Kind of metal used.
Special test, if any, such as:
Durability required
Oil resistance
Soap resistance
Salt spray
Cold check
Fastness of light
Alcohol proof
Mar proof
Print test
Reduction, if any, and how much.
How applied, spray — dip or brush.
If sprayed, by hand or automatic machine.
If a wrinkle or urea type baking enamel — maximum and minimum hold out time.

Information received from salesmen:

Bake 1 hour at 250 degrees
Spray one coat on black iron
Special test none
Reduction none

Several days later a report was received that the sample had failed. A careful check revealed that the specifications sent to the laboratory were not correct, and should have been—

Bake 1/2 hour at 300 degrees
Dip one coat on cold rolled steel
Special test, in soap solution for 72 hours.
Reduction 3-1 with solvent naphtha.

UNSATISFACTORY PAINT SERVICE

The distribution of blame for unsatisfactory paint service is an academic question. The punishment for paint failure falls alike upon the just and unjust. The practical question therefore is, what can each party at interest do in a really constructive manner toward the solution of the problem. Little progress can be expected if each party waits until it is reluctantly convinced of its moral responsibility for the situation, but if we set aside the unimportant question of blame and sincerely turn our efforts to the solution of the problems, better paint service will result.

Here and There

GRAND RAPIDS MEETING

The outstanding success of the Grand Rapids meeting, held January 20, was due in a great measure to the untiring efforts of Chester C. Smith, the enterprising young member of the J. C. Miller Company's staff, assisted by Maurice Caldwell, Homer Morton, Lyman Sperry, C. E. Abel, Charles Werft, president of the Branch, and Charles Whalley, the hard working secretary.

Even though it snowed all day, the temperature being near the zero mark, about three hundred sat down to the banquet which was held at the close of the Educational Session. Ray Goodsell, president of the A.E.S., was introduced by the Branch president, Charles Werft, as the chairman of the meeting.

Prof. E. M. Baker, University of Michigan, was the first speaker, his subject being "Causes of Pitting in the Electrodeposition of Nickel." Dr. D. T. Ewing, Michigan State College, spoke on "Physical Chemical Methods of Control for Plating Processes." The third speaker, Mr. B. F. Lewis, chose as his subject "A New Method of Cleaning." All three speakers were given plenty of questions to answer, and at the close of the meeting were given a vote of thanks. Approximately one hundred fifty persons attended this session. A floor show followed the banquet. There were ten numbers on the program all of which were thoroughly enjoyed. Dancing was next, and lasted until the early hours of the morning.

We wish all our members could meet all the members of Grand Rapids Branch. From the president down they are a fine lot of men, hard working and enthusiastic. Last year it was our privilege to visit the Branch under similar circumstances. We noticed this year, however, that the attendance was almost twice as large and the outlook for the future even more optimistic. Congratulations, Charlie Werft and the officers of Grand Rapids Branch, for your fine showing and your progressive spirit.

CHESTER SMITH

This picture of Mr. Smith was furnished by Mr. Milller of the J. C. Miller Company. Mr. Miller has been a tower of strength in the Grand Rapids Branch for a great many years.

CHICAGO ENTERTAINS 846 AT ANNUAL BANQUET

It is utterly impossible to give our readers a complete picture of the banquets held this year at Detroit and Chicago under the auspices of both branches of the A.E.S. One must be there in person to fully appreciate the amount of work the committees are called upon to do in order to make such events successful. In the December REVIEW we told of the Detroit meeting, at which time over eight hundred persons sat down to the banquet and enjoyed the full program prepared by the Committee.

On Saturday, January 27, the Chicago Branch chose the Palmer House as the meeting place for their 28th Annual Banquet. Promptly at 2 P. M. Presi-

JAMES W. HANLON

dent James W. Hanlon opened the Educational Session by introducing President of the Supreme Society R. M. Goodsell, Executive Secretary W. J. R. Kennedy and chairman of this year's Convention Committee, Charles C. Conley of Dayton. Several others were asked to take a bow including Past Supreme Presidents W. M. Phillips and Oscar Servis. After these formalities were over, President Hanlon asked Mr. Oscar Weickmann to preside.

The first paper was prepared by Mr. B. F. Bower of the Howell Co. and was read by our old friend, Harold Faint. The article was entitled "New Developments in Semi-automatic Polishing and Buffing." Mr. E. H. Lyons, Chief Chemist of the Meaker Co., read a paper on "Cold Rolled Steel and the Electroplater." "General Shop Practice and Economics" was the title of an article

presented by Dr. M. M. Beckwith, Development Engineer, J. B. Ford Company.

Mr. A. B. Wilson, past supreme president of the A.E.S. and now chairman of our Research Committee, gave an illustrated talk on "Bumper and Anode Manufacture at the Chevrolet Plant of General Motors Co." There were over three hundred men present at this session. The addresses were clearly and forcibly given, the audience showing their appreciation by discussion and applause.

The banquet at 7 P. M. was a colorful event, the ladies present providing most of the color. It was an inspiring sight to see so many people in attendance. We wish we could name all the men, past and present, who have made A.E.S.

H. A. GILBERTSON

history, but time and space will not permit. H. A. Gilbertson, past president of the Supreme Society, was general chairman of the Committee and he did a splendid job; associated with him were Messrs. Servis, Tompkins, Stepka, Longfield, Herbst, Hazucha, F. J. Hanlon, Weickmann, J. W. Hanlon, Hay, Westerburg and Holmgren.

The floor show was one of the finest we have seen. There were eleven items on the program, each act being loudly applauded — Virginia Cooper, the musical comedy star, in songs that please, Betty Lee, the Miramba wizard, the Magician who took the shirt off a member of the audience, and the Armstrongs were great. In fact every act was good all through the program. After the floor show there was dancing until the party finally broke up way past midnight.

HIGHLIGHTS

The lapel microphone was a distinct help to the speakers. The audience could even hear "Red" Wilson say something under his breath when the picture machine stopped abruptly.

Oscar Servis and Frank Hanlon are contemplating a trip to the Pacific Coast in a few weeks. Our congratulations to Oscar who has just received a gift of one thousand dollars from his Company (Felt & Tarrant) for forty years continuous service. We wish both of these boys a pleasant trip.

Detroit and Milwaukee Branches were well represented. It is a pleasure to see our largest branches cooperate with each other in these annual events.

OSCAR E. SERVIS
Honored by his Company for length of service

Dr. M. M. Beckwith's talk pleased us immensely, especially when he said that the members of the A.E.S. should read the REVIEW more carefully and get all the good they can out of it. We notice some speakers will give other publications credit, but they keep mum about the REVIEW. We hope Dr. Beckwith will read this paper at the Convention. It may surprise some of our members rather pleasantly, we hope.

Mr. Lyon's paper should also be read at the Convention. This paper was well studied before being presented. It was a pleasure to attend the Educational Session and to listen to the speakers, all of whom know their subjects as the discussions showed.

We have been away from home for two weeks visiting the various branches in the Middle West. One thing that impresses us is the number of young men becoming interested in the A.E.S. In Lancaster we found young men in the majority as that Branch is being organized. Grand Rapids had a splendid group of young men, some of them eagerly accepting the responsibilities of the Branch.

In Cincinnati the same thing is true. President Bob Knoepfler and Secretary Martin Gannon are both capable young men, each one doing a real job. Incidentally that meeting in Cincinnati on Thursday February first was a big success. George Hogaboom was the speaker and was at his best. A more attentive audience never listened to a speaker as George told about some of the overlooked plating problems. One young man travelled from Cincinnati to Dayton (128 miles) to hear George give the same address the following night.

While in Cincinnati we were royally entertained by Mr. and Mrs. O. T. Towner and Bob. We have a warm spot in our heart for the Queen City. There

are great possibilities of building up a strong branch there. We point with a considerable amount of pride to Joe Adler, Tom Whitehead, Frank Nordman, Tom Towner, Reuben Pawsat and Carl Kloos as men who have held the fort under considerable difficulties and are now beginning to see the results of their labor. We noticed several large manufacturing concerns represented at the meeting, including two young men holding important positions at the Crosley plant, one of whom is a member of the Branch. Keep up the good work, boys, you have accomplished a lot in the last year.

DAYTON

The meeting in Dayton on Friday evening, February 2, was well attended. Mr. Hogaboom was the speaker. President Goodsell and the Executive Secretary also made a few remarks. After the meeting, President Conley asked the Convention Committee to meet. Each chairman reported the progress being made by his committee. Mr. Powell, chairman of the Program Committee, stated that his work in securing ads for the program has been quite satisfactory. There are a number of firms whose definite replies have not yet been received however.

Mr. Leuchauer reported that the number of papers promised will be sufficient to complete the educational program. He also stated that in cooperation with Miss Marquardt, it will be possible to secure preprints of all papers to be read at the Convention. Authors of papers are requested to have their papers in Mr. Leuchauer's hands in time for them to be printed.

Mr. Smith is starting a campaign amongst all the branches to stimulate interest in a one hundred per cent branch exhibit. Mr. Cochrane reported that the entertainment plans were well advanced.

Mr. Wise, publicity, Mr. Haas, registration and Mr. Berner, plant visitation, also reported progress.

All the boys, including Mr. Fraine are quite enthusiastic regarding the work accomplished so far. A large attendance from the branches to the Convention is anticipated. Realizing the sincere efforts being put forth by Mr. Conley and his committee to make the 1940 Convention in Dayton the best ever, we urge our members to plan now to attend. Start boosting, help in preparing a paper from your branch, and be sure to see that your branch is represented in the list of exhibits.

"Mr. R. M. Goodsell and
The Executive Board of the
American Electroplaters' Society.

"It behooves us at this time to propose a name for Honorary Membership in the Supreme Society.

"Whose benevolence in giving of what he possessed in knowledge and experience to those less learned than he in electroplating — who helped to emblazon the trail of Progress, ever eager to encourage the younger men in the industry. By these tokens he became a national figure in our midst under the pseudonym of 'Dad,' an exponent of Progress.

"Unfortunately his demise was too soon, for Chicago Branch in particular, to recognize and propose his name (which it feels guilty in not having done long ago) to Honorary Membership in the American Electroplaters' Society. While he cannot be present in life, it will be a recognition for posterity of one who was a laborer in the Vineyard of Progress.

"Therefore, Be It Resolved that Chicago Branch of the American Electroplaters' Society propose the name of *Fred J. Liscomb* as Honorary Member of the American Electroplaters' Society at the Dayton Convention in the year 1940.

"Respectfully submitted,
J. W. HANLON, *President*
M. H. LONGFIELD, *Secretary*"

Business and Social News

BRANCH NEWS

Educational Activities

AMERICAN ELECTROPLATERS' SOCIETY

Springfield Branch held its regular monthly meeting at the Hotel Charles on January 22, at 8:00 P. M. The meeting was called to order by President Costigan.

The secretary read a letter from Mr. A. W. Garrett, secretary of the Boston Branch, announcing that it is making a bid for the convention city in 1941. After a short discussion by Mr. Frank Clark it was unanimously decided to instruct our delegates at the Dayton Convention to endorse Boston as the convention city for 1941.

The following applications for membership were read and accepted: Mr. Moris H. Balaban, Ware Metal Specialties Co., Ware, Mass., and Mr. H. Corwin Miller, Worthington Pump Co., Holyoke, Mass.

Mr. Costigan then introduced the speaker of the evening, Mr. W. M. Phillips, past president of the A.E.S., and Chief of Electroplating Research at the General Motors Corp., Detroit, Mich. Mr. Phillips gave us an interesting talk on his recent visit to Europe, illustrated with pictures, many of which he took when he was there.

In comparing European plating methods Mr. Phillips said that he was impressed by the number of cleaning operations employed to insure a clean surface for plating, the number of small vapor degreasers around the plating room, and the almost universal use of air agitation for rinsing, acid and plating tanks. The frugality of the European engineers is well demonstrated by the lightweight construction of plating generators and equipment. They are so designed that very little excess metal is used, although they are sufficiently rigid to withstand considerable overload or punishment. The plating specifications employed in Europe however are very comparable to our own.

In the discussion following, Mr. Phillips cleared up two interesting points. First, that all automotive specifications are insisting on minimum thickness and not average thickness as formerly, also the term "significant surface," commonly employed in specifications was defined as that part of the surface which will be subject to wear or corrosion, or would be in view of the average observer. In presenting specifications to the plater the supplier should identify the portions of his pieces which he considers significant.

Mr. Phillips was given a rising vote of thanks for his interesting and enlightening talk.

The meeting then adjourned to the grill room at 10:00 P. M. where we spent a truly enjoyable hour working out our problems and telling stories over food and refreshments.

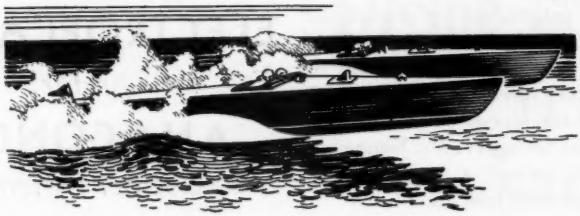
D. S. HARTSHORN, JR., *Secy.-Treas.*

Hartford Branch met Monday evening, January the fifteenth, at the home of Mr. H. R. MacFayden, 9 Forrest St., Hartford, Conn.

Due to the absence of our President, Mr. Backus, the meeting was called to order by Past President Mr. Joseph Pietro.

A report was received from Mr. Austin relative to the meeting held in Waterbury in connection with the April Regional meeting. A report concerning

Out of the Spray—to a Winning Finish

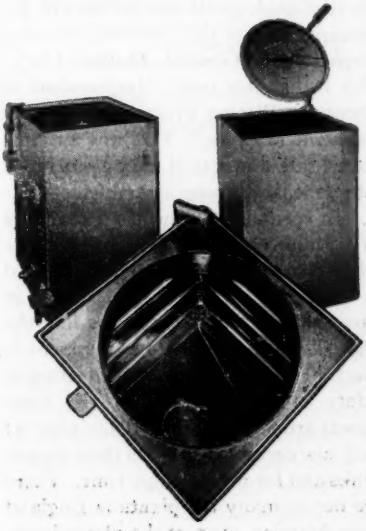


The last and most important thing,—in winning with plating,—as in motor-boat racing,—is the FINISH.

In the race to lower time records and reap the cup of rewards that fine finishing brings, "VORTEXEDDY" spray is designed to help your plating finish,—finish in first place.

"Rinsing with Spray the Storts Way" tells you how to be there at the finish,—with your finishing. Write for your copy of this no obligation booklet,—NOW.

"VORTEXEDDY" Spray Rinse Tanks are distributed by The Udylite Corporation. Their nearest office will gladly and promptly serve you.



The Udylite Corp., Chicago, Ill.
The Udylite Corp., Detroit, Mich.
The Udylite Corp., New York, N. Y.
The Udylite Corp., Cleveland, Ohio
J. C. Miller Co., Grand Rapids, Mich.
Donald Sales & Mfg. Co., Milwaukee, Wis.
L. H. Butcher Co., San Francisco, Cal.
L. H. Butcher Co., Los Angeles, Cal.
Electroplating, Inc., Atlanta, Ga.
MacDermid Inc., Waterbury, Conn.
F. H. Bathke, St. Paul, Minn.

STORTS WELDING COMPANY

42 STONE STREET **MERIDEN, CONNECTICUT**

Manufacturers of Welded Fabrications to Specification

a branch paper for the National Convention was also received.

After the meeting, we were very pleasantly entertained by one of our associate members Mr. W. H. Stoddard with some very clever and mystifying magic. "Bill" sure does know his stuff.

We were also pleased to have with us, our Supreme Secretary, Mr. Kennedy.

We were served a very delicious lunch by our kind host and hostess.

The meeting was attended by thirty-four members and was adjourned at 11:00 P. M.

VERNON E. GRANT, *Secy.*

Rochester Branch on Friday night, January 19, 1940, held its regular monthly meeting at the Seneca Hotel. We had as our guest speaker Mr. W. M. Phillips, head of the Electro Chemistry Department, General Motors Corp., who had as his topic "Impressions of European Plating Practices and other Relevant Matters." This was an illustrated talk and was of very great interest to the large group assembled to hear it. In speaking of European practices Mr. Phillips told of the amazement he felt at the amount of air agitation used in cleaners, cyanides and even in chrome. The habit he said is like the fog. The full automatic equipment is much lighter and without the factors of safety of our automatics, and their speeds are much slower. They plate at very low current density in their copper tanks and for much longer time. There are not as many big plants in England as in America, most of the plants being job shops. They use a lot of degreasers but practically all are just the vapor phase type. In commenting on the use of copper oxide rectifiers he said it was agreed in England that the sale of them was dropping down and going back to generators for source of power. After the talk Mr. Phillips very kindly answered a host of questions after which he was given a rising vote of thanks. Come again, Bill. The meeting was then adjourned, after the reading of the application as an associate member of Mr. Bernard H. Schenkel, 77 North Water St., Rochester, N. Y. The application was ordered published.

JUDSON R. ELSTER, *Secy.*

EXPERIENCED ELECTROPLATERS

prefer

ANACONDA

Copper Anodes

... because their unexcelled purity assures uniform corrosion, the highest quality deposit in the shortest possible time and low scrap losses. Furnished with suspension holes drilled as desired, or tapped for end hooks.

ANACONDA

THE AMERICAN BRASS CO.

General Offices, Waterbury, Conn.

Offices and Agencies in Principal Cities

Wing Your Way to Dayton
the Birthplace of Aviation

Los Angeles Branch of the A.E.S. held their regular monthly meeting January 10 at the Rosslyn Hotel. President Ray Bray presided.

Mr. Wm. A. Vensel of the Detroit Rex Products Co. had just returned from the Annual Sales Convention in Detroit with a lot of new ideas on the Detrex Degreasing process. This dis-

cussion was illustrated with a complete new set of colored motion picture films.

Our second speaker of the evening was Mr. Frank C. Rushton, West Coast representative for the Sangamo Amperehour Meters. Mr. Rushton spoke on the advancements that have taken place in the plating industry in the past decade.

Mr. E. R. Holman, our librarian, found the following questions in the Question Box:

Q. What is the difference between regular chrome solution and hard chrome solution?

A. There is little difference in the solution itself, but the application is somewhat different. Temperatures are generally around 140° F. and current density from 400 to 600 amps. per square foot.

Q. What causes a Rochelle copper solution to have a blue color, this color deepens when solution is cold? Is this an indication of an unbalanced solution?

A. The solution is probably low in free cyanide.

Q. How can I strip a deposit of tin plating from stainless steel springs?

A. Use a 6. ounce per gallon caustic soda solution with reverse current.

Meeting adjourned at 11 P. M.

RAYMOND SOLIVAN, *Secy.-Treas.*

Wing Your Way to Dayton
the Birthplace of Aviation

New York Branch held two scheduled meetings during the month of January at their headquarters in the Conference Rooms of the Hotel Pennsylvania, New York City.

The first meeting of Friday, January 12, was a short business session followed by the monthly educational feature, which was to be provided by Dr. Shumpelt of Baker & Company, precious metals, of Newark, N. J. Dr. Shumpelt was to speak on "Electrodeposition of Gold" but at the last moment was called away. In his absence the branch librarian, Dr. C. B. F. Young, substituted and gave a talk of his own on the same subject "Deposits of Gold and its Alloys." Dr. Young held the interest of his hearers for an hour and a quarter and at the conclusion of his talk was asked many questions, some of which were quite pertinent and which questioned his conclusions on the behavior of other metals in gold solution. Dr. Young was accorded a vote of thanks by the fifty-five members present.

The second meeting of Friday, January 26, was a business meeting followed by the Question Box hour on current plating and finishing problems, an activity of which the membership has taken a full advantage for several years past.

Divine POLISHING and BUFFING
LATHES
•
ALL SIZES
•
TEN TYPES
•
ALL PRECISION BUILT
•
Divine Brothers Company
62 Whitesboro St., UTICA, N. Y.
Quality Products Since 1892

GOOD CLEANERS
are essential to
GOOD PLATING

Hanson-Van Winkle-Munning Company manufactures a complete line of cleaners that possess unequalled reputation as the standard of the metal cleaning and finishing industry. H-VW-M Cleaners have been developed by engineers capable of interpreting your cleaning problems correctly . . . because they have available the experience of more than a century devoted to metal cleaning and finishing.

You can depend on H-VW-M Cleaners. Greases and oils, or the residue resulting from polishing and buffing, is completely removed from metal surfaces, and plating deposits are therefore fully adherent.

For thorough, dependable cleaning as well as economy, specify H-VW-M Cleaners.

Manufacturers of a complete line of electroplating and polishing equipment and supplies

HANSON-VAN WINKLE-MUNNING CO

MATAWAN, NEW JERSEY

PLANTS Matawan, New Jersey . . Anderson, Indiana . . Bridgeport, Connecticut

SALES OFFICES · Chicago · Cleveland · Detroit · New Haven · New York · Philadelphia · Pittsburgh · Springfield (Mass.) · Syracuse

ROYLITE CLEANER

Roylite W Cleaner is a well balanced compound of detergent alkali salts. It contains no insoluble substances which may be deposited upon the work.

MATAWAN CLEANERS

No. 1-W is a general purpose cleaner for the removal of heavy oils and greases. It is of the alkali-soap type and can be used upon ferrous and non-ferrous metals equally well.

No. 2-W is a cleaner that can be used either as an immersion cleaner or with the electric current. Contains no excess caustic alkali—can be used on any metal that has excellent detergent properties. Compounded for non-ferrous metals—will not tarnish. Cleaner is 100% soluble and most economical for general work.

No. 3-W is an active modified cleaner for general heavy duty work. It is used chiefly for steel stampings and forgings, with approximately six ounces per gallon concentration in bath.

No. 40-W is a high caustic heavy duty cleaner which contains a wetting agent.

WRITE FOR
BULLETIN NO. C-104

This is a folder which describes the essentials to good cleaning and gives the answers to the problem. It covers eight different cleaners and three soaps. Send for Bulletin C-104 — a request on your letterhead will bring you a copy at once.

KOSTICO

Kostico is a rosin soap cleaner—ideal for brass, copper and nickel-silver as well as for soldered work where ordinary alkali cleaners cannot be used. Especially adapted to the jewelry trade.

NEW ENGLAND CLEANER

Is a refined fish oil base compound and is known to be a "Free Rinse". Contains no free caustic—and is recommended for removing buffing compositions from highly polished surfaces. Ideal for cleaning aluminum and soft metals, brass.

XXX LYE

Is ideal for removing greases and buffing dirt from metal surfaces. XXX Lye consists of small white crystals which dissolve instantly.

PLATER'S SOAP

...is a fish oil soap manufactured ...the finest selected grade of fish oil. ...tains all the elements required for ...leaning of metals and emulsifica... ...of greases and oils.

Both meetings were adjourned at 11.00 o'clock P. M.

FRANK J. MACSTOKER, *Secy.*

Dayton Branch met at the Dayton Engineers Club on Friday, February 2. This meeting was well attended, Supreme President R. M. Goodsell and Executive Secretary W. J. R. Kennedy being among those present.

Following a short business session Mr. Conley asked several of the committee chairmen for the coming convention to give a short resumé of the work that has been done to date.

Mr. Goodsell and Mr. Kennedy were asked to say a few words. They have visited several of the other branches in the last two weeks and they both spoke well of the interest that is being shown in the coming convention by the members with whom they came in contact. Mr. Kennedy's closing remark was a plea to the members of the Society for better discussions following the papers which are read, not only at conventions but at the different meetings. Many times it is from these discussions that the real value of the paper comes.

Mr. Leuchauer introduced our speaker, Mr. Hogaboom, whose subject was "Some Overlooked Problems in the Plating Room."

As usual when listening to Mr. Hogaboom those present heard one of the finest talks they have listened to for some time, and realized at its close that although plating has progressed remarkably in the last few years there are still many things that are not known, or have been overlooked.

At the close of the discussion following this talk Mr. Fraine spoke of the benefit to the young members of the Society in being able to hear a speaker like Mr. Hogaboom who has spent many years in research and experimental work, and has done much to help the plating industry to be what it is today.

Mr. Fraine's motion resulted in a rising vote of thanks to Mr. Hogaboom for this splendid evening.

CORLISS W. POWELL, *Secy.*

Used Buffs for Sale

64-68—1⅛" arbor—20 ply

Full Disc - Loose - or Sewed

Thousands of every size

8"—8¢ each 9"—9¢ each

10"—12¢ each

MICHIGAN BUFF CO., INC.

4054 Beaufait Ave. Detroit, Mich.

Wing Your Way to Dayton the Birthplace of Aviation

Grand Rapids Branch. Mr. H. W. Kennedy from the Electroplating Division of E. I. du Pont de Nemours & Co., addressed the Branch on the subject of "Moly-Black" at the regular meeting, December 14, 1939.

Moly-Black is a black oxide deposit of nickel and molybdenum. It is most successfully applied on steel parts over an initial deposit of cadmium or zinc. The Moly-Black deposit will add approximately 100 hours additional salt spray resistance to what would be ex-

pected for a given thickness of cadmium or zinc. Moly-Black may be deposited directly over zinc base die-castings. Lacquer may be used as a final coating, but is not a necessary step.

Mr. Kennedy stated that it is no longer necessary to maintain the solution at elevated temperatures at all times to prevent precipitation of salts.

"Moly-Black" is the only black appearing electro-deposit which is completely black to a "pencil" examination beam of light. Other deposits give variations of black, ranging into black or gray.

Mr. Kennedy also presented some interesting colored slides of various types of work plated with "Moly-Black." Gifts of "Moly-Black" sample ash trays were given to all members present.

The Educational Session preceding the Third Annual Banquet of the Grand Rapids Branch was held in the Esquire Room of the Rowe Hotel, January 20.

Branch President Charles O. Werft introduced our well-known friend and president of the A.E.S., Raymond Goodsell, who presided at the Session. The Executive Secretary W. J. R. Kennedy was also present and spoke briefly regarding the Society.

Mr. Goodsell called on Mr. J. C. Miller, who founded the branch in 1918. John C. Knape, the first secretary-treasurer, also was present.

President Goodsell introduced the speakers as follows: Professor E. M. Baker presented notes on "Causes of Pitting in the Electrodeposition of Nickel." He pointed out that pitting is not always due to the presence of hydrogen. The correct conditions for pitting must exist. Such conditions as bath composition, pH, temperature, surface of base metal, etc., can be contributing functions. Mr. Baker showed diagrammatic and micrographic slides of pit formations due to various conditions and causes.

Dr. D. T. Ewing was the second speaker on the program. His subject, "Physical Chemical Methods of Control of Plating Solutions" dealt with the use of the spectrograph, the spectrophotometer and other physical chemical instruments such as the glass electrode and the turbidimeter. The use of these instruments in the hands of skilled operators will provide accurate results and a means of control of specific items which is only partially obtainable by other methods.

Mr. Bert Lewis, the final speaker, presented a paper along with slides on the effects of cleaning of zinc base die castings by anodic and cathodic methods. Photo-micrographs showing the difference in extent of diffusion of copper by the two types of cleaning were most interesting.

Die cast parts cleaned anodically and then etched in very weak acid or carried directly to copper-plating step showed almost no diffusion of copper and no tendency to blister. When parts cleaned anodically were subjected to temperatures of 350° F. for one hour, no blistering occurred even when the total amount of copper was diffused into the zinc. This was not shown to be the case where castings were cleaned cathodically.

Mr. Lewis concludes that hydrogen is one of the causes of the blistering of plated zinc base die castings that are heated to elevated temperatures. The expanding hydrogen that was absorbed in the casting created a blister. Also the necessity of using a strong acid etch after cleaning, as in the case of many cathodic cleaning processes, is eliminated and the initial rate of diffusion is greatly reduced. The Educational Session adjourned at 5:15 o'clock.

C. W. SMITH, *Librarian*

Newark Branch of the A.E.S. met Friday evening, January 19, at the Club Room of the Hotel Douglas, at 8:30 P. M. with President John Kotches presiding. All officers present.

A communication from Products Finishing in which they expressed their appreciation for the Distinguished Service Award was read and placed on file and also one from Boston Branch in which they asked Newark Branch for their support in bringing the 1941 Convention to Boston. It was voted to turn this letter over to the delegates to the Dayton Convention, when they are elected.

Mr. George Wagner stated that a committee meeting for the Newark-New York joint Educational Session and social affair was held at the Hotel Douglas, 7 P. M., January 19. It was definitely decided to hold this affair at the Hotel Douglas on March 30. The Educational Session will start at 2:30 P. M. and the evening affair which will consist of entertainment, dancing, beer and soft drinks served all evening and a buffet lunch served from 10 P. M. until midnight, will start at 8 P. M. and end at 2 A. M. Mr. Wagner further stated that the ladies will be entertained in the afternoon by the Ladies Auxiliary of Newark Branch. Mr. Paul A. Oldam in charge of the Educational Session, who will be assisted by Dr. C. B. F. Young, stated that the speakers he had secured so far were Mr. Mockridge of Johns Manville Co., Mr. R. O. Hull of E. I. du Pont de Nemours Co. and Dr. Kenneth Graham of A. Kenneth Graham and associates. He also stated that he was awaiting answers to communications from Mr. George B. Hogaboom and Dr. C. B. F. Young.

One of our members wanted to know what the Ladies Auxiliary are doing at their meetings. He was informed by the Chair that the Ladies Auxiliary meets once a month on the third Friday at the Newark Elks Club and that their meetings are more or less social. They have card games at which they distribute prizes and join the men for refreshments at the Elks Grill and let the men pay the bill.

They also arrange theatre parties, etc., and in that way it keeps the ladies of Newark Branch more closely associated.

The guest speaker for the evening, Mr. L. Eckelmann of Pyrene Mfg. Co. was then presented by Mr. Robert R. Sizelove, acting librarian. His subject was "The Relation of Finish to Product." His talk dealt mostly with the executive's scientific problems, such as, finishes and thickness of deposits produced on articles which have to stand constant wear as compared to products on which the finishes are solely ornamental. Mr. Eckelmann was given a

pH PAPERS

FOR DETERMINING pH VALUES OF SOLUTIONS

ACCURATE RESULTS IN FEW SECONDS

Just dip strip of pH paper in solution and read off pH value. Can be carried in pocket. Always handy.

AVAILABLE RANGES

Acid:	*Alkaline:*
pH 5.2—6.7 (nickel)	pH 6.6— 8.1
3.6—5.0 (nickel)	8.2— 9.7
3.7—5.3 (zinc)	9.2—11.0
1.9—3.4 (copper, nickel)	(brass, copper,
0.9—1.5 (copper, etc.)	silver)
	11.0—13.5 (Cadmium, zinc, tin and cleaners)

Each Range is Separately Boxed.

PAUL FRANK

456 Fourth Avenue New York City

Canada: Jaquays; Starke & Co., Montreal

rising vote of thanks for his very interesting talk by the thirty-eight members present. Meeting adjourned at 10:00 P. M.

GEORGE WAGNER, *Secy.*

Wing your way to Dayton the Birthplace of Aviation

Cleveland Branch. The regular meeting of Cleveland Branch was held on Saturday evening, February 3, in the Hotel Cleveland with an attendance of fifty-two, President Matts presiding.

The application of Lester Lynch, as an active member, and the applications of Fred J. Hill and Roy Richard Kirkpatrick, as associate members were received. Mr. Louis Piovarcy was elected as an active member.

A letter was read from Boston Branch announcing their intention to press their invitation for the 1941 Convention to come to Boston. It was moved by Mr. Scott and seconded by Mr. Honnicher that the Cleveland delegates to the 1940 Convention be instructed to support Boston Branch in this matter. Motion carried.

A verbal message was received from Al Krause, saying that he had taken a position in Milwaukee and intended locating there permanently. Cleveland Branch wishes him success.

Mr. Lyons introduced Mr. George B. Hogaboom of the Hanson-Van Winkle-Munning Co. who spoke on "Some Overlooked Problems in the Plating Room."

Mr. Hogaboom spoke in his usual forcible manner and brought some facts for both the new and the old members. He ended his talk by painting a picture of the future plating room as being a place where men, trained in observation, would turn out high-speed production with high current densities under exactly controlled methods. A question period followed the address. Mr. Hogaboom was given a rising vote of thanks.

P. R. LYONS, *Secy*

YOU SHOULD USE

Zialite

Reg. U. S. Pat. Off.

Nickel Plating Solution

1. If you plate **ZINC DIE CASTINGS.**
2. If you wish to plate **ALUMINUM.**
3. If you have some complicated shapes to cover.
4. If you plate articles made of several pieces soldered together and want to cover the solder.
5. If you would like **ONE** bath which will plate **ALL** types of **WORK** and **METALS.**
6. If you would like a bath that will **ALWAYS** work.

ZIALITE CORPORATION
117 North Second Ave.
Mt. Vernon, N. Y.

Milwaukee Branch held its three hundred fifth regular meeting at the Republican Hotel Friday, February 2.

Plans for our annual educational meeting and banquet on April sixth are progressing nicely. The Committee on the Educational Session report that we will have with us as speakers Mr. Pinner, Mr. Al Hermansen, Mr. Soderberg, and Mr. Hogaboom.

In March in addition to our regular meeting there will be a special meeting on the second Friday. Mr. Leroy Beaver will speak to us on that evening, the place and time of which will be announced to our members by mail.

The librarian conducted an interesting Question Box, after which the meeting adjourned.

DEXTER F. RHODES, *Secy.-Treas.*

Wing Your Way to Dayton
The Birthplace of Aviation

Binghamton - Syracuse Branch held their January meeting at the Cortland Hotel, Cortland, Friday, January 26. The secretary was instructed to get into touch with Dick Byrd at Little America and order a pup from his Mammoth Snow Plough when there is a blessed event, as the Lord knows we need something like that for our Branch members to get out to our meetings.

The Syracuse boys had evidently lost their skis (or perhaps sent them to Finland) as not one of them showed up. Five or six of the Binghamton boys, however, headed by Igloo Man Fletcher and Eskimo Harnett brought in Bob Sizelove on a dogsled and bringing up the rear guard was that intrepid explorer, lobster loving Ray Berghold of the Rochester Branch. Our vice-president Floyd (Corset) Kenyon had travelled four miles on a brand new pair of snow shoes (said Santa Claus left them at his house) also was glad to see our member all the way from Johnson City, Harry Herlikofer. He had runners on his car. George Fahrenz, one of our Board of Managers, got there somehow and he lives in some whistle stop in the wilds of Pennsylvania. I am worried about him as I can't imagine how he ever got back. I myself was left stranded in the city of Syracuse, Big America, at 12:30 A. M., by the tough, hard driving Ray Berghold who then left for Rochester (I hope).

However the nine of us did sit down to a very swell dinner. I hope Bob Sizelove realized that Ray Berghold is not a member of our Branch but belongs to Rochester Branch.

Our guest speaker, Bob Sizelove of the Frederick Gumm Chemical Company, gave us a splendid informal talk on the precautions necessary in preplating operations. He covered all the metals and there was plenty of discussion. There seems to be some difference of opinion as to the actual savings brought about by the installation of bright Ni. We were sorry our bright nickel expert, Bill Mahar,

PERMAG
Cleaning
Compounds

Perfect Cleaning before Perfect Electroplating

There is one way to be sure that metal is 100 per cent clean before plating, and that is to use PERMAG as a cleaning agent. This is the report of hundreds of electroplaters throughout the country. They use PERMAG constantly.

MAGNUSON PRODUCTS CORPORATION
Main Office and Factory, Third & Hoyt Sts., Brooklyn, N. Y.
Specialized Scientific Cleaning Compounds for the Electroplating Industry. Warehouses in Principal Cities, U.S. Canada: Canadian PERMAG Products Ltd., Montreal, Toronto.

couldn't make it but Fulton, N. Y., might as well be Murmansk, Russia, this winter.

We hope Bob can come again when we get all our members dug out. Our thanks to the Gumm Company for risking their chemist in our marvellous climate. Meeting adjourned 11:00 P. M.

GEORGE SIMMONS, *Secy.*

Wing Your Way to Dayton the Birthplace of Aviation

Boston Branch met Thursday the first at the Manger Hotel, with President DeLorme in the chair.

The Banquet Committee reported the banquet will be held on Saturday, April 13, at the Statler Hotel, Boston, at 2 P. M. with an Educational Session in the afternoon, and banquet and floor show and door prizes in the evening. This will be the day that Boston Branch will show how it entertains its members and friends, everybody will renew old acquaintances and make new ones.

The chemistry class committee made its report and while they were trying to find out just what the members wanted to take up, it resulted in quite a discussion, some not quite sure what they did wish, so it was decided that they write every member and have him state just what he wants, in this way it is hoped that the committee will be able to arrange a course to please all.

We had with us William Cahill, president of Providence Branch. He gave the members some advice on the class. He was instructor of our last class. A. Mintie, and Colgate Gilbert also spoke.

There being no speaker for this meeting our friend A. Mintie who has just recovered from a severe illness and is now O.K., gave us a little talk on hot barrel plating solutions. He then gave some interesting information to the members on this line of work, explaining the current, anodes, and formulae. He also answered questions for the members.

Tickets for the banquet can be had from Secretary A. W. Garrett. Tickets will be $2.50 each which will include everything.

Meeting adjourned at 10:45 P. M.

A. W. GARRETT, *Secy.*

Buffalo Branch met at the Bailey Bowling Academy, Friday, February 9, with President Joe Ruff in the chair.

The guest speaker, Mr. William Schneider of E. I. du Pont de Nemours

ANNOUNCING

An improvement in the available methods for the analysis of

BORIC ACID

The importance of close control of Boric Acid in nickel plating solutions is now clearly recognized. We offer a simplified, accurate method of analysis suitable for routine control in the plating room.

Write for details regarding this and other methods for solution control.

APOTHECARIES HALL COMPANY
Est. 1849 WATERBURY, CONN.

was introduced by the president. "Cyanide Bill," whose topic was "Moly-black" gave a brief outline of black nickel and its disadvantages as hitherto used by most plating concerns. It would show a great difference of color under varying light conditions. "Moly-black," a new development by his company, would appear jet black under any light conditions. It also showed a marked superiority over black nickel in simplicity of operation and maintenance.

Rubber-lined tanks were preferred but other types could be used. Best results were obtained at 176° F. and a pH of 4.3-4.5 electrometric was necessary, pH was simply controlled by the addition of caustic soda or sulphuric acid. An insoluble type of graphite anode was used and salts had to be added to maintain solution strength—1/1000 of an inch in ten minutes was deposited at 2-5 A.S.F. Because of its low amperage "Moly-black" was very adaptable to modern high-speed industry. It could be plated directly on lead, die-cast and aluminum. It could not be applied to gold, steel, silver or brass satisfactorily until they had been zinc or cadmium plated. It had excellent throwing power, was impervious to rust, but would not take a severe compression strain.

After his talk, Bill had to answer a variety of questions which he did in his own direct manner.

The meeting adjourned at 10 P. M., and was followed by the usual festivities with President Joe Ruff (a recently discovered baritone) leading the quartets.

RODERICK MCGHEE, *Secy.*

Wing your way to Dayton
the Birthplace of Aviation

Waterbury Branch held its regular February meeting at the Hotel Elton on Friday, February 9. The meeting was very successful, both in respect to the regular meeting and to the informal "get-together" dinner which preceded it. There were thirty members at the dinner and sixty at the meeting, which was presided over by President Ellsworth Candee. He called on Executive Secretary Mr. Kennedy who spoke about plans and progress being made by the Dayton Branch for the national convention this June. Mr. Kennedy also told of his recent trip out West where he attended the Chicago and Detroit annual meetings and banquets. Each of these affairs had attendances of over eight hundred, which shows how alive the western branches are.

Mr. Candee then called on Second Vice-president Joseph Downes who is in charge of the exhibits at the national convention.

Mr. Downes told of the great interest shown in the branch exhibits at Asbury Park last year where every branch was represented. He hoped that the branch exhibits this year would be equally good, or better if possible.

President Candee then turned the meeting over to Tennant Elwin, who introduced our guest speaker, Mr. Kenneth P. Bellinger. Mr. Bellinger

Every BUFF Made to Your Order
Deliveries on Schedule
MIDWEST BUFFS
USE MIDWEST
E. 79th ST. & PLATT AVE. CLEVELAND OHIO

spoke on "Silicates and their Application to Metal Cleaning," describing the various silicates of sodium that are being used at present in metal cleaning and comparing them with the other alkalies in cleaning value. In spite of the complexity of the mechanism of cleaning he made his talk very clear. After answering various questions Mr. Bellinger was given a warm vote of thanks for his talk.

Mr. Elwin then called on Dr. Dubpernell who reviewed briefly a recent German book on "Hard Chromium." It was interesting to note that much of the technical part of the book was derived from American sources.

The meeting broke up at 10:45 P. M.

GEORGE MUSICO, *Secy.*

Wing Your Way to Dayton the Birthplace of Aviation

Philadelphia Branch meeting was called to order by President J. E. Underwood. Mr. L. A. Critchfield, speaker of the evening, gave a brief resumé of the problems of etching, which caused a lively discussion, at the conclusion of which the speaker was heartily applauded.

Applications of Messrs. Charles K. Goss as Active, H. A. Guiger and W. W. Hall as Associate members were received. Mr. L. A. Critchfield tendered his resignation as vice-president of Philadelphia Branch which was accepted with regret. It was voted that the office be kept open till next term. Communication from Dayton Branch in regard to a Convention paper from Philadelphia Branch was read. It was moved and seconded that the Dayton Convention Committee be advised that Philadelphia Branch will not have a paper at the convention. A request from the Messrs. L. A. Critchfield, H. L. Hovis, A. W. Hagen, H. C. Brubaker, William Klunk, C. M. Ellslager, K. H. McMillen, C. E. Brubaker, Robert Etter, Active members, and R. E. Saly, J. C. Mylin, J. E. Butson, Associate members, that they be transferred to Lancaster Branch was read, moved, and seconded that same be granted according to the By-Laws.

The speaker for our next meeting will be Al. Hirsch, topic "A Theory for the Passivity of Chromium." At the March meeting Dr. H. Lukens will speak on "Mechanism of Conductance." The meeting then adjourned till February 23.

ROBERT E. JACKSON, JR., *Secy.*

MAGNUS PRODUCTS
Tested and Proven for the Plater's Needs in
PRE-CLEANING
CLEANING
POLISHING
FINISHING
MAGNUS CHEMICAL COMPANY
41 South Avenue Garwood, N. J.
MAGNUS CLEANERS

Newark Branch met on Friday evening, February 2, at the Club Room of the Hotel Douglas, Newark, N. J. The meeting was called to order at 8:30 P. M. with President John Kotches, presiding. All officers present.

The minutes of the previous meeting were read and approved.

A communication from Mr. Nelson Sievering, third vice-president, was read from E. I. du Pont de Nemours & Co., and also one from *Metal Industry*, in which they thanked Newark Branch for their Distinguished Service Certificates.

Mr. L. S. Lopata of the Duriron Co., Inc., Dayton, Ohio, was next presented as the guest speaker for the evening by Mr. George Reuter, acting librarian. His subject was "Practical Aspects of External Heating and Filtration of Plating Solutions." Mr. Lopata's talk was very interesting and dealt with heat exchanges and the advantages of Duriron installations over lead coils, etc., in plating tanks. His talk was accompanied by numerous slides on which he illustrated various installations. The costs of these installations were also discussed and many questions were asked after his talk.

Mr. Lopata was given a rising vote of thanks by the forty-four members who attended this meeting. Meeting adjourned at 10:30 P. M.

GEORGE WAGNER, *Secy.*

Wing Your Way to Dayton
The Birthplace of Aviation

Chicago Branch had its regular monthly meeting on February 10, with President J. W. Hanlon presiding. Messrs. S. Swigon, J. Melnitzke, S. Kurdenok and G. Buchanan were elected to membership.

Mr. Gilbertson, chairman of the Banquet Committee, reported that the Educational Session was attended by about 350 and the meeting went off in good style. The lapel microphone was a decided improvement, as it enabled everyone to hear with ease. Following the Educational Session was the largest banquet we have ever had with an attendance of 846. The Spamer organization made a splendid presentation of the entertainment and dance music as was evidenced by the many complimentary remarks passed to the committee by the attendance. The dinner was very good, the service was

Besplate
NICKEL ANODES
AND
McGEAN CHEMICALS
for Better Nickel Deposits and Greatest Satisfaction
USED BY THE LEADERS IN THE INDUSTRY
THE McGEAN CHEMICAL COMPANY
CLEVELAND, OHIO

fine and a very pleasant evening of frolic and fun was had by all.

The meeting was then turned over to the librarian, Mr. O. Weickmann.

Mr. O. E. Servis had some samples of different types of lead that had been used in chrome solution for some time and gave a talk on the results of the test.

The following questions were in the Question Box.

Q. What impurities cause trouble in cadmium plating?

A. Tellurium, lead, chromium, silver, tin, copper and nickel.

Q. If a light coat of cadmium is plated on die castings will the plate be absorbed?

A. No, cadmium can be deposited on die castings with no ill effects.

Q. Will a rubber-lined tank cause trouble if used for a zinc cyanide plating solution operated at 110° *F.?*

A. Not unless oily substances are used in the solution.

M. H. LONGFIELD, *Secy.*

Wing Your Way to Dayton the Birthplace of Aviation

Toronto Branch met on February 2, at King Edward Hotel, President Acheson in the chair and Bill Price acting as vice-president.

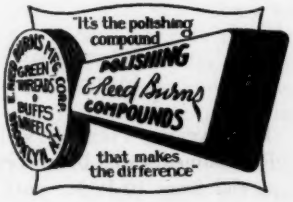
Our president introduced Mr. Buell Manning as guest speaker of the evening. Letters were read from Mr. Kennedy, Mr. Nelson Sievering and Mr. R. F. Clark. One application was received and the application of Mr. Courtemarche of London, Ontario, was balloted on. He was received into the Branch as an active member. Tom O'Keefe gave a report on the card party to be held in March, over one hundred platers and their friends are expected and a good luncheon is part of of the program. Good and Welfare was next on the program and President Acheson called on Mr. Buell Manning to give his talk on Alnico metals and permanent magnets.

Mr. Manning took us back to the early days of the lodestone and the lost tribes of the magnetos. Although this subject was hardly in keeping with electroplating, yet indirectly Mr. Manning pointed out the advantage of the permanent magnet and stated that he really wanted to find out our needs, that between the platers and the department of research, something might develop that would be of benefit to the plater.

With Mr. Manning was Mr. Harry A. Gadd, both of the Canadian General Electric Co. They demonstrated with different kinds and sizes of magnetos, from the kind that could lift from

"Price may catch the shopper but it is quality that holds the customer."

HEADQUARTERS SINCE 1888 FOR ALL TYPES OF BUFFING - POLISHING COMPOUNDS AND WHEELS.



41 WITHERS STREET - BROOKLYN, N. Y.

twelve pounds, up to almost anything. One magnet was as big as a big man's fist and had a key attached to it that just wanted to stay put. If this magnet was ever lowered to the bottom of a steel tank that wasn't lined, it would have to stay there. Mr. Gadd gave novelty magnets to all the members.

Mr. Manning and Mr. Gadd received a hearty vote of thanks and were requested by the members to come again. Meeting adjourned 10.30 P. M.

J. S. CAIRNS, *Secy.*

Wing your way to Dayton
the Birthplace of Aviation

Cincinnati Branch of the A.E.S. held its meeting on Thursday evening, February 1, at 8:00 P. M. in the Hotel Metropole, with Librarian Frank Nordman presiding.

The speaker for the evening was Mr. George B. Hogaboom, his subject being "Some Overlooked Problems in Electro-Plating." Forty-two persons turned out at the meeting to hear this very interesting talk. In his opening remarks Mr. Hogaboom stated, "Sometimes it is well to take stock of the things which we know." During the course of the evening he reminded us of a number of things which we knew but had been overlooking. His explanation of a tong tester for testing current and his description of convection currents were especially interesting.

Two other prominent officers of our Society, Mr. Ray Goodsell, president and Mr. W. J. R. Kennedy, executive secretary, attended this meeting.

Mr. Goodsell spoke of the benefits of Branch Meetings and the Educational Program of the Society. Mr. Kennedy asked for advertising support for the MONTHLY REVIEW and urged the members to read the REVIEW more thoroughly. He also stated that speakers complain of lack of discussion at the branch meetings and also urged a larger membership for the Cincinnati Branch.

After the meeting a buffet luncheon with drinks was served. Old acquaintances were renewed and new acquaintances were made. While eating and drinking, nickel, copper and other plating solutions were put into shape, and plans were being made to attend the 1940 Convention in Dayton, Ohio.

NEWARK AND NEW YORK BRANCH

Educational Session and Social Event

Hotel Douglas — Newark, N. J.

March 30—1940

Educational Session	2:30 P. M.
Evening Affair	8:00 P. M.

The Evening Program will consist of entertainment and dancing. Refreshments will be served all evening and a buffet lunch will be served from 10 P. M. until midnight.

Tickets — $2.50 each

Three applications for membership were received.

MARTIN GANNON, JR., *Secy.*

Wing Your Way to Dayton the Birthplace of Aviation

Bridgeport Branch met February 8, at Pjuras Chop House. The meeting was conducted by President William Ehrencrona and about fifty members and guests were present. Chick Helmle reported progress on paper for the National Convention. President William Ehrencrona made a report on the meeting of the Regional Banquet Committee. Sick Committee reported on the illnesses of George Karl and Bill Ehrencrona and members of his family.

Joe Sterling, chairman of the Membership Committee, reported a total of sixty-six members to date. Applications for membership were received from the following: Arthur McNeil, Frank J. Kalafus, Anthony Desiena, Milton T. Vreeland. Ralph M. Sasso was elected as an active member.

The meeting was adjourned about 9 P. M. and was followed by the "Old Timers' Night Social." Several reels of sports pictures were shown by Earl Couch, taken by Bob Leather et al, on their vacation trips through Maine and Canada. This was immediately followed by some highly educational films which were enjoyed by all those present. The social broke up about 12:30 after the members and guests enjoyed the refreshments that were served.

EUGENE PHILLIPS, *Secy.*

Detroit Branch meeting on February 2 at Hotel Statler was called to order by Mr. W. W. McCord, due to illness of President Higgins and absence of Vice-president Pinner.

Communications were read from the Boston Branch, asking support for their city convention site, and from Mrs. Carl Heussner, thanking the Branch for flowers sent her husband.

The speaker of the evening was Mr. W. G. Sheane, of the General Electric Company at Bridgeport, Conn. The essence of his talk revolved around the fact that they had discovered that the amount of paint which they were actually using was far in excess of the amount which was necessary to cover the surface which they produced. The theme was the methods they used to find out what became of the excess paint, and the steps taken to correct the conditions.

Mr. Sheane showed by means of slides results, both theoretical and practical, to be obtained by various methods of brushing and handling in application.

He then illustrated the same results by movies taken of extremely unconscious operators. "The giftie gie us, to see oursel's, as ithers see us," but Mr. Sheane apparently was rather in fear of what some of those operators might do sometime, and if they did, he would have to run for his life.

The movies not only forcefully brought home the points, but were very amusing to boot. Some of the operators worked twice as hard to secure much poorer results, even if they did admire their own handiwork.

It was rather a novel presentation and was apparently well enjoyed by an audience which was not up to our usual standards in point of numbers, but was evidently very select as regards cerebral capacity, because for the first time in several years, there were no questions in the Question Box. Meeting adjourned.

The Question Box which follows is reported from the January 5 meeting.

Q. In the case of a copper-nickel-chromium deposit on steel, what is the effect of the chromium thickness on

corrosion resistance? What thickness of chromium is considered necessary?

A. For actual test data, refer to the National Bureau of Standards Research Paper R.P.-712 entitled, "Protective Value of Nickel and Chromium Plating on Steel," by Blum, Strausser and Brenner. This paper may be obtained from the Superintendent of Documents, Washington, D. C. for five cents (in coin).

In connection with these results, it should be pointed out that because of the well known poor throwing power of chromium solutions, it is inadvisable to specify as a minimum thickness, the smallest value which gave food results on the exposure tests. If, for example, .000025" minimum thickness was specified on an irregularly shaped object, the thickness of chromium on the high points would be so great that cracking of the deposit would very likely occur. This of course would nullify any beneficial effect of the chromium deposit at these points as far as corrosion resistance was concerned. Generally speaking on irregularly shaped objects not more than .00001" should be specified as the minimum chromium thickness.

The following question was directed at the speaker of the evening:

Q. What is the effect of wetting agents on the cleaning of die castings either with direct or reverse current?

A. In the experiments that were run with wetting agents in cathodic cleaners, considerable trouble was encountered principally because of the difficulty in rinsing the wetting agents from the work.

Q. (a) Is it possible to strip zinc base die-castings which have been copper-nickel and chromium plated without damage to the casting?

(b) Is it more economical to strip or scrap the castings which have been rejected because of plating defects?

A. (a) It is possible to strip plated castings with very little or no damage to the castings. The chromium may be removed by immersion in 10% by volume muriatic acid or by treating anodically in an alkaline solution such as 10% sodium carbonate. The nickel can be removed by making the plated casting anodic in sulphuric acid, approxi-

SIXTH ANNUAL BANQUET

The Sixth Annual Banquet and Technical Session of Boston Branch will be held Saturday, April 13, 1940, at the Statler Hotel, Boston, Mass., at 2 P. M.

Technical Session at 2 P. M.

Banquet, floor show, and door prizes at 7 P. M.

Tickets $2.50 each.

•

Tickets may be had from the secretary A. W. Garrett, 100 King Street, Dorchester, Mass.

mately 66% by weight. It is important that the strength of the sulphuric acid be maintained approximately constant. If it becomes too weak, the copper or zinc is attacked too rapidly and if too strong, the process is too slow. Remaining copper deposit can be removed by immersion in a hot sodium polysulphide solution (approximately 2 lbs./gal.). A thickness of .0005" of copper will be largely converted to the sulphide in 5 or 6 minutes. The casting is then rinsed, and the copper sulphide removed by immersing in a sodium cyanide solution. It is then advisable to pickle the casting in 3% sulphuric acid, rinse, dry, and rebuff the casting to remove any zinc sulphide which may remain on the surface.

(b) Whether or not it is economical to strip a casting rejected because of faulty plating depends on a large number of factors. One factor is whether or not the casting can be salvaged by remelting at a nominal cost. Another factor is the cause for the defective plating. If the casting plated unsatisfactorily because of faulty composition, porosity, or other faults inherent in the casting itself, it is undoubtedly more economical to scrap the casting because when replating, these defects will undoubtedly cause faulty plating each time it is stripped and replated. If, however, the fault is in the plating procedure, it is undoubtedly economical to strip and replate after the fault has been corrected.

R. B. SALTENSTALL, *Librarian*

Pittsburgh Branch regular meeting was held Thursday evening, February first at the Mellon Institute of Industrial Research. Due to unavoidable circumstances Mr. A. B. Wilson and Mr. Lunt who were to be the speakers, were unable to attend the meeting.

Mr. William J. Hennessy of Pennsylvania Salt Manufacturing Company and Mr. Glenn Herring of Hanson-Van Winkle-Munning Company were elected as Associate members on February 1, 1940. Mr. Carl V. Yerger of Lustro Coated Sheets Company has made application for Active membership.

After the short business meeting, the balance of the evening was thrown open to questions and discussion. The meeting was adjourned at 10:00 P. M.

The next meeting will be held at the Bureau of Mines Building at 8:15 P. M. Friday, March 1, 1940.

FRANK R. KELLER, *Secy.*

Wing Your Way to Dayton
The Birthplace of Aviation

Toledo Branch regular meeting was held in Room 224, of the Vocational High School, on Monroe Street, Thursday evening, January 4, at 8:30 P. M.

Mr. Ward Hunlock reported on the progress of his committee concerning papers for the 1940 convention. Mr. Fred May, chairman of the educational program, announced that Mr. Beaver would talk on barrel finishing at a special meeting of the Branch, on Wednesday evening February 28, and that Mr. Klass, and Mr. Wilson of Detroit, would talk to us on automatic polishing and buffing at our meeting March eight.

A motion was carried that our next meeting be held at the home of Mr. Henry Schuldt, and after a short business meeting the evening will be spent in enjoying the party planned by Mr. Weiker and committee. The secretary was asked to read some portion of the constitution at each meeting in the future, so as to better acquaint the members of the purpose of the Society. Announcements were made for the Chicago, and Grand Rapids banquets.

The application of Harry E. Moser,

for membership in the Toledo branch as an active member, was accepted.

Educational Chairman Mr. May introduced the speaker of the evening, Mr. Floyd Opplinger of the du Pont Co. Mr. Opplinger read a very interesting paper on cleaning of die-castings, and showed colored slides which more clearly illustrated the effect different cleaner strengths, time of immersions, etc., had on plated-die castings when they were heated to high temperatures. The pictures showed very clearly what happened to the layer of copper between the nickel and base when parts were not properly cleaned and were subjected to heat. After answering many questions, Mr. Opplinger was was given a vote of thanks, and the members expressed the wish that he would return to Toledo in the very near future. Meeting adjourned 11:00 P. M.

GASTON BERGEMAN, *Secy.*

CONGRATULATIONS TO MR. AND MRS. CRANE

At the Waterbury Branch meeting on Friday Evening, February 9, President Ellsworth Candee took time out to congratulate Dick Crane of the Lea Mfg. Co. on the birth of an eleven pound baby boy. Dick accepted the applause from the members, a broad grin lighting up his face. He predicted a brilliant career for his offspring whose name is to be Richard P.

Aerial Photo by Mayfield Aerial Surveys, Dayton, Ohio

DAYTON RUBBER CO.
Dayton, Ohio

LANCASTER BRANCH

The first regular meeting of the Lancaster Branch of the A.E.S. was held Friday Evening, February 9 at F. & M. College. The meeting was attended by 35 members and guests.

The educational program was very interesting and was received with favorable comment from those attending. The paper discussed was presented by Messrs. G. Zerback and D. Robson on the subject of "Analysis and Characteristics of Sludges in Brass Plating Tanks." Both of the speakers were members of the Philadelphia Branch and their cooperation in delivering our first lecture was very much appreciated by our new Branch. A rather lengthy discussion followed the lecture period.

Immediately following the lecture period a business meeting was held at which time election of officers for the period of the temporary charter took place. The temporary charter was presented to the Branch and was received with hearty applause.

Transfers were received from the Philadelphia Branch for eight members. Applications were also received from fifteen persons and these were read and turned over to the Board of Managers for approval before election.

The following officers were unanimously elected to serve for the duration of the temporary charter: Chairman, L. A. Critchfield; vice chairman, N. J. Gebert; secy.-treas., H. L. Hovis; librarian, H. C. Brubaker; board of managers, K. McMillen, C. E. Brubaker, H. E. Kilheffer.

Mr. Critchfield appointed the following chairmen for the various committees: Membership, W. Klunk; Entertainment, M. P. Gross; Finance, C. E. Brubaker; Educational, C. Elslager; Publicity, R. E. Shay.

A meeting of the executive committee was called by the chairman fro Friday evening, February 16, to discuss our future meetings and program. The meeting adjourned at 10.05 P. M.

H. L. HOVIS, *Secy.-Treas.*

NEW HAVEN BRANCH

Following is a news-letter from the New Haven Branch of the A.E.S.

The February open meeting of the New Haven Branch of the A.E.S. was held Tuesday evening, February 6, 1940, with Mr. L. C. Lapata of the Duriron Co., Inc., as guest speaker. Mr. Lapata gave a very enlightening and interesting talk on "Practical Aspects of the External Heating and Filtration of Electroplating Solutions," which was profusely illustrated with some fine slides.

A meeting of the metallurgical class, which by the way is proving to be quite a success, was held on Tuesday evening, February 13, with Mr. L. Theelin, Metallurgist of the Chase Brass & Copper Co., giving a lecture on "Tube Mill Practice."

Following the lecture a half hour was devoted to shop problems with Tom Chamberlain conducting. Featuring the discussion was Bob Mooney's description of "Triple Chrome Plating." According to Bob, this consists of two platings, each followed by a strip, plus a third successful plate.

The following dates should be kept in mind — February 20, business meeting; February 27, Metallurgy class; March 5, open meeting — guest speaker, Mr. H. A. Grove of Republic Steel Corporation.

JOSEPH T. SULLIVAN, *Librarian*

"Dear Mr. Kennedy:

"Referring to Mr. Walter Weiker's letter in the October REVIEW, this Branch also feels that in the matter of Honorary membership, undue emphasis has been placed upon the old age, rather than on the other qualifications of proposed candidates.

"We, therefore, propose that the following limitations be made to Part 1, Article 2, Section 3 of the Constitution:

"The numbers of honorary members shall be limited to ten.

"Very truly yours,

CHAS. S. WHALLEY, *Secy.-Treas.*"

THE PLATED WARE EXHIBIT

Last year at the 27th Annual Convention held at Asbury Park, N. J., every branch displayed an exhibit of their plated ware, making a one hundred per cent exhibit. It has taken twenty seven years to reach this percentage. The Dayton Branch does not desire to be hosts to a convention which will lose this high percentage. Each branch should take this same attitude, inasmuch as any branch failing to send an exhibit to the convention in Dayton must, of course, be partly responsible for the failure of upholding this record.

Have you appointed a chairman in your branch to solicit plated articles that will be displayed at the Plated Ware Exhibit in Dayton June 10, 11, 12 and 13?

The committee has agreed to pay express charges to and from Dayton on articles that are to be exhibited at the convention. In addition the Dayton Branch will also have the articles insured for theft and a watchman will be employed at all times while these articles are on display.

Start now by laying aside articles of your manufacture and have them mounted on a board for the sake of attraction. The Plated Ware Exhibit, to be a complete success, depends primarily on each and every branch.

Articles will be published on this page at future dates and as reports are received from the different branches indicating they are sending exhibits, the name of each branch will be published. Let's hope that we can see all thirty branches published long before the convention date, June 10, 11, 12 and 13.

LEWIS G. SMITH, *Chairman Executive Committee*,
618 McKaig Ave., Troy, Ohio

MR. McKEON THANKS BROTHER FEELEY

"I want to take my hat off to one of the patriarchs of the A.E.S.

"Last Sunday night I landed in Montreal from Boston. Somewhere in New England I picked up a brute of a cold. On arrival in Montreal I had developed a fine young case of grippe.

"Our good Canadian friend, John H. Feeley, came to my hotel to see me as I was too sick to go see him or anyone else. 'Doctor' Feeley proceeded to take me in hand. He prohibited my leaving the hotel and so looked after me that in a short time I was on my way continuing my trip to Mexico.

"John had a difficult time on his hands forcing me to take his medicine but I finally gave in and his treatment worked wonders.

"I owe Past Supreme President Feeley a debt of gratitude for the considerate gentlemanly way he treated me. I take this way of acknowledging it. All the 'Old Guard' who go to the annual conventions well know the character of genuineness of this man who for so many years has stood out in our minds as representing Canada — Hon. John H. Feeley.

WILFRED McKEON, *President*,
Sulphur Products Co., Inc.

DAVIES HEADS PENNSALT MARKET RESEARCH

Well known throughout the steel and chemical fields, Richard L. Davies has been appointed manager of the newly established Market Research Department of the Pennsylvania Salt Manufacturing Company, according to an announcement by Leonard T. Beale, president.

Mr. Davis is known to many in the chemical and allied industries through his sales development work on various Pennsylvania Salt chemicals, as well as through his chemical manufacturing and usage patents, and for his contributions to trade and technical publications.

The new department is organized to study the market for products now manufactured by Pennsylvania Salt, or products under contemplation; to launch the sale of new products in line with sales and management policies, and to suggest to the management what should be considered for future production and sale both in the heavy chemical and specialty departments. Market trends and opportunities will likewise be presented to the management for formulation of production and sales policies.

Mr. Davies' headquarters will be at the executive offices of the company.

METALUSTRE is the Supreme Metallic Finish for metal products of every description. It is beautifully lustrous, adherent, hard, marproof, durable, moisture and perspiration resistant. It is supplied in copper, brass, bronze, silver, and other metallic colorings, and also in brilliant reds, greens, blues, and many other colors.

For Baking: Codur METALUSTRE Synthetic Enamel sprays as readily as ordinary baking enamel, dries out of dust rapidly, and bakes ready to wrap and ship, without danger of paper-printing, in from 15 minutes at 325° F. to 60 minutes at 250° F. It can be used with either baking or air-drying primer. With proper equipment, can also be applied by dipping.

For Air-Drying: METALUSTRE Lacquer Enamel gives a fine metallic finish in a single air-drying coat. This well-known M&W product is being used by hundreds of manufacturers.

Full information on either baking or
air-drying METALUSTRE on request.

Maas and Waldstein Co. Newark, N. J.

Branch Offices and Warehouses . . . 1658 Carroll Ave., Chicago . . . 1228 W. Pico Blvd., Los Angeles

LACQUERS **PIONEERS IN PROTECTION** ENAMELS

Meeting of the Research Committee, American Electroplaters' Society, Washington, D. C., February 3, 1940.
(Report of Mr. R. A. Dimon)

The meeting was called to order by Mr. A. B. Wilson, chairman, at 9:30 A. M. with Mr. R. A. Dimon acting as secretary. The following members were present:

A. B. Wilson	E. S. Taylerson	F. C. Mesle
B. H. McGar	R. A. Dimon (visitor)	Wright Wilson (for C. E. Huessner)
T. F. Slattery	E. A. Anderson	W. Blum
F. J. MacStoker	E. T. Candee	

Mr. Anderson, chairman of the Sub-committee on the Research Program outlined the principal difference of opinion among those submitting proposals for work on brass, steel and zinc base die castings. Some members felt that the polishing and buffing steps preliminary to nickel plating should vary as to the method of securing a commercial finish, while others thought that the variations should be in the finish itself, even though all the samples did not represent commercial practice, in order to throw light on the effect of surface roughness of the base metal on the porosity of the subsequently deposited nickel.

Based on this discussion Mr. Taylerson made the following motion which was carried unanimously: "That the Research Associate employed and/or Dr. Blum draw up a detailed program on polishing variables prior to nickel plating brass, steel and zinc base die castings, after conferring with the members of this committee representing the brass, steel and zinc suppliers, respectively, and consumers." This program is to be so outlined as to embody both points of view referred to above, but with the emphasis as regards the number of samples on the commercially produced material.

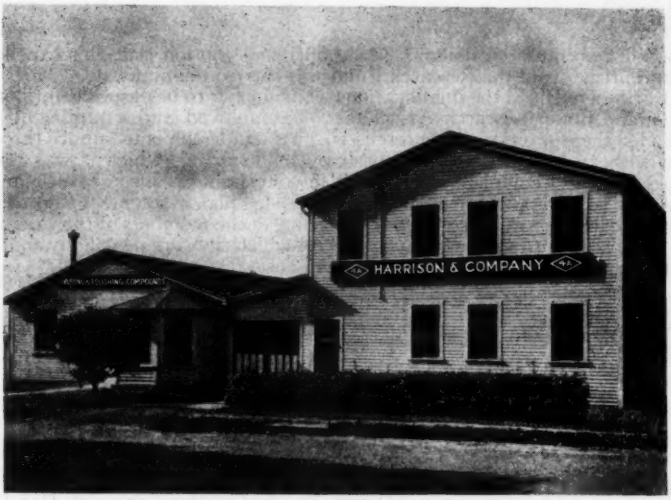
The question of securing the loan or rental of a sheet polishing machine was discussed and it was agreed that this subject should be looked into further. Locations for the contemplated seacoast atmospheric corrosion tests were discussed. Dr. Blum brought out that there were some precautions taken by the Army due to the military importance of Sandy Hook location and that it might be increasingly difficult to secure admittance to the reservation, particularly if our country were at war. However, in the absence of other suggestions as to a substitute location, it was agreed to take the matter up with Committee A-5 of the A.S.T.M., and Mr. Taylerson was appointed to do this. Dr. Blum brought out that they would put out samples at the Bureau of Standards in addition to those planned for the Bell Laboratories in New York and the seacoast location which would give in effect one industrial, one mild and one marine location, or one half of the locations used in the previous tests which included two of each type.

Cleaning tests were discussed and it was agreed to use one polishing technique for all samples of each of the three materials (brass, steel and zinc base die castings) varying only the cleaning, just as in the polishing tests the cleaning cycle for each material will be kept constant, while the polishing is varied. In setting up the variables for both of these tests an effort will be made to keep them parallel for the three base metals, although the same methods cannot be used. Mr. Anderson's motion that Dr. Blum and/or the Research Associate work out a cleaning program in consultation with the interested members of the committee was carried unanimously. Cleaning as referred to herein includes the whole cleaning cycle, i.e., degreasing, alkaline cleaning and pickling.

Dr. Blum states that responses to his previous requests for advice had only averaged about fifty per cent and that he would accept the responsibility of supervising these tests only on the understanding that those to whom he sent outlines of contemplated tests, etc., would criticize them freely and make suggestions to aid him in the work.

Mr. Anderson's motion that the laboratory tests (porosity, etc.) be left up to Dr. Blum was carried unanimously.

Dr. Blum said that the published results of the Society's previous exposure tests were just ready for the printer and stated that enough copies could be bought to supply all the members and contributors to the Society for not in



STAINLESS STEEL COMPOUNDS
4A CEMENT AND THINNER, a substitute for glue.

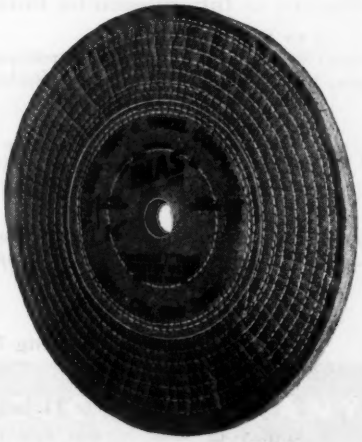
HARRISON & COMPANY HAVERHILL, MASS.

The buff for hard "cutting down" work

BIAS Buffs Spirally Sewed are ideal for all quick "cutting down" operations.

Made of best grade cloth—from our own mills—cut and formed by our special bias process.

No waste of cloth or compound with BIAS Buffs—they last and wear. Compared with ordinary buffs, they are lower in cost. Send for trial order.



BIAS
Spiral Sewed
BUFF

BIAS BUFF & WHEEL CO., Inc.
438 Communipaw Ave.
JERSEY CITY, New Jersey

excess of two hundred dollars. Mr. Anderson's motion that this expenditure be authorized from the Research Fund was carried unanimously.

Dr. Blum outlined the qualifications which he felt to be desirable for both the Senior and Junior Research Associates to be employed, and a number of applicants for these positions were discussed. Mr. Anderson is to supply the chairman with an application blank used by his company which it was thought would bring out complete information in connection with some of them.

Mr. Wilson was authorized to proceed with his plan of having the requests for funds handled centrally from his office. Some of the members of the Committee will write follow-up letters to concerns with which they are personally acquainted if the original requests do not yield the desired results.

AMERICAN ELECTROPLATERS' SOCIETY SIXTH ANNUAL EDUCATIONAL SESSION

You are cordially invited to attend this session and also the Banquet to be held Saturday, March 30, 1940 at the Roosevelt Hotel, Hollywood.

Program for Educational Session

10 to 10.45 A. M.
A Summary of the Researches on Plating at the National Bureau of Standards, Washington, D. C. — By Dr. William Blum

10.45 to 12
Bright Nickel Plating in Full Automatic Equipment — By Mr. F. A. Maurer, Research Chemist, General Electric Co., Ontario, California.

Intermission for Lunch - 12 Noon to 1 P. M.

1 to 2 P. M.
A Paper on the Electrodeposition of Alloys — By Mr. J. G. McCallum, Chairman of Golden Gate Chapter, American Society for Metals, Berkeley, Calif.

2 to 3 P. M.
Paper on: Current Practice in Plating Alloy Die-Castings. — By Mr. William Broughton of Morris Kirk & Sons Co., Los Angeles, California

3 to 4 P. M.
Specifications for Electroplated Coatings — By Dr. William Blum, National Bureau of Standards, Washington, D. C.

4 to 4.30 P. M.
Question Box Session

Evening 7.30 P. M.

Dinner Dance Entertainment Door Prizes

Tickets $2.50

Mail your Reservations *now* to: Raymond Solivan, Secretary-Treasurer, 4073 Globe Ave., Culver City, California or call Ad 8043 or Wh 9942

For Production Cleaning of Aluminum use Perm-A-Clor

Sales appeal in your products is closely related to your Cleaning Methods. To get *extra customer appeal* use Detrex Solvent Cleaning on your production!

On your difficult jobs (such as aluminum, die castings, and mixtures of ferrous and non-ferrous metals) Perm-A-Clor solvent is *the* satisfactory material to use because of its higher stability and longer life.

For quick, sure, low-cost, and safe cleaning of all kinds of metal parts, for inspection, finishing, etc., Detrex Solvent Degreasing is your answer.

Write for information on either solvent degreasing or alkali cleaning. Would you like a demonstration or a survey? We will send an experienced engineer to consult with you — without obligation.

DETROIT REX PRODUCTS COMPANY

Engineered Solvent Degreasing and Alkali Cleaning

13010 HILLVIEW AVENUE • DETROIT, MICHIGAN

Branch Offices in Principal Cities

NEW BUFFING LATHE

A new buffing lathe, Type MO, designed for a range of work not requiring a heavy duty machine has been developed by the Hanson-Van Winkle-Munning Co., Matawan, N. J., manufacturers of electroplating equipment and supplies. As shown in the illustration, a generous overhand for clearance is furnished.

The body of the lathe is a heavy one-piece iron casting and the base dimensions of all sizes are 24" wide by 20" deep. Drive is by "V" belt, with quick belt changing a special feature. Any one spindle speed from 1800 to 3600 R.P.M. can be obtained and other speeds can be had by changing the motor sheave pulley. The spindle is of 1-1/4" to 1-3/4" alloy steel.

Type MO lathe is furnished for 220, 440 and 550 volts, 2 or 3 phase, 60 cycle, A.C. power circuit; also for special or other A.C. or D.C. circuit.

A temporary charter has been granted to Lancaster Branch by permission of the Executive Board of the A.E.S. The Branch meetings are held the second Friday of each month at Stahr Hall, Franklin and Marshall College, Lancaster, Pa.

Detroit Rex Products Company, Detroit, Michigan, manufacturers of Detrex solvent degreasers, alkali washers and cleaners, and dry cleaning equipment, announce the appointment of E. L. McIlhenny as manager of the Alkali Division. Mr. McIlhenny, who formerly worked out of the Cleveland Office, will have charge of all sales and service of the company's complete line of alkali cleaners.

Mr. McIlhenny is a graduate in chemical engineering from Washburn College and took post graduate work at the University of Minnesota. He has spent the past thirteen years in the metal cleaning industry.

For Tough Polishing Jobs . . .
Alundum Abrasive

IT'S on a job like this that Alundum Abrasive is especially popular. The special surface treatments give a grain that holds securely to the wheel head—that stands up under rough treatment from sharp cornered work.

Special crushing and screening processes used in preparing Alundum Abrasive assure grains of uniform size and shape—no oversize grains to cause scratches.

NORTON COMPANY, WORCESTER, MASS.

G-96

NORTON ABRASIVES

DYCLENE PROCESS

The Dyclene Process was developed to provide several new methods of cleaning zinc and aluminum base die castings. Provided the few recommendations we make are closely followed, we can assure that the plated deposit will not peel or blister even when heated to temperatures as high as 300° F. for 1 hour. We offer two methods to accomplish this result.

Method I, involves the two tank cleaning cycle. The first step employing Dyclene "S" is a soaking operation which loosens or removes a great percentage of the impacted buffing compound. It is suggested that the usual water rinse be omitted going direct from the soak operation into the reverse Dyclene "E" solution. This reverse cleaner completely removes all compounds, oils, greases, and inorganic substances. Following this, work is given the usual water rinses and a 1% muriatic acid dip.

Anodic cleaning is strongly recommended. Dyclene "E" may be used cathodically. However, we feel that the benefits gained by using reverse current such as a thoroughly activated surface, elimination of gas absorption, rapid discharge of ionic particles produces a chemically and metallurgically clean surface insuring an adherent bright deposit. Concentrations of the Dyclene compounds are governed entirely by the interval elapsing between the buffing and cleaning operation, nature of composition used and the size and shape of the article cleaned.

The following concentrations are applied to the majority of cases although adjustments may be made to fit specific cleaning time cycles. The Dyclene "S" compound which is used only in the soaking operation is generally employed at concentrations between 4-6 ounces per gallon, temperature between 185-200°F. The Dyclene "E" compound which is used only in the reverse electric cleaner is recommended for use at concentrations between 2-6 ounces per gallon, temperature 165-205°F., current density of 25-50 amperes per sq. ft. voltage 3-6. We further recommend the use of removable nickel plated steel electrodes.

Method II, is designed for plants where an appreciable investment in degreasing or pressure alkali machines has been made and who desire to continue their use. Provided the cleaning in these machines is properly carried out a 30-60 second immersion in the Dyclene "E" electric reverse cleaner gives a chemically and metallurgically clean surface. For most applications the concentration of 2 ounces per gallon, temperature 180-210°F., current density 25-50 amperes per sq. ft., voltage 4-6 will prove satisfactory. Again concentrations may be varied to fit any specific time cycle. Dyclene "S" is packed in 100-lb. and 250-lb. wooden containers. Dyclene "E" is packed in 100-lb. and 350-lb. non-returnable steel drums.

Due to the fact that so little can be accomplished without installing these products in a production cleaning line, we are refraining from submitting laboratory samples but would be glad to ship any of the above mentioned containers on a trial demonstration basis. Dyclene "S" is priced at 12c a pound for the 250-lb. barrel. Dyclene "E" at 10c per pound for the 350-lb drum, f. o. b. Waterbury, Conn. Prices for smaller containers or when purchased from distributor's stock are slightly higher.

Mr. R. C. Enos, president Standard Steel Spring Company, Coraopolis, Pa., announces the appointment of Mr. J. M. Cosgrove as director of the Development Laboratory. Mr. Cosgrove will be actively interested in research on the new corrosion proof coating developed by the company.

Mr. Cosgrove was formerly chief chemist of Noblitt-Sparks Industries, Inc., and before that, process control engineer for the Meaker Company, development engineer in charge of plated finishes for Western Electric Company.

Mr. Cosgrove graduated from the Massachusetts Institute of Technology as an electrochemical engineer. He also has a degree from Manhattan College. He has written a number of papers on cleaning and finishing problems in the coating of metals and is well known in this industry.

DARCO S-51

- specially made and activated to eliminate "ghosts" in plating solutions

Grease, oil, breakdown products of brightening and wetting agents—these are among the "ghosts" that get into plating solutions and ruin many a plating job.

Darco, the activated carbon, removes these "ghosts" bodily and completely—saving time and trouble for electroplaters. Darco S-51 is selective in its purifying power. It removes unwanted impurities, but has little or no effect on brightening or wetting agents. In addition, Darco S-51 is free of sulphide, alkali, and similar contaminating matter. It is carefully ground and screened free of excessively fine particles, insuring proper retention in plating filters.

If your supply dealer does not yet carry Darco in stock, write us direct and send us your dealer's name.

DARCO

This trademark identifies the genuine Accept no packages without it.

D A R C O
CORPORATION
60 East 42nd St.
New York, N.Y.

INDEX TO ADVERTISERS

American Brass Co., The, Waterbury, Conn. 120
Apothecaries Hall Company, Waterbury, Conn 129
Atlas Powder Co., Zapon Division, Stamford, Conn. 83
Belke Manufacturing Co., Detroit, Mich. 84
Bias Buff & Wheel Co., Inc., Jersey City, N. J. 143
Burns, E. Reed Mfg. Corp., Brooklyn, N. Y. 133
Darco Corporation, New York City 149
Detroit Rex Products Co., Detroit, Mich. 145
Divine Brothers Co., Utica, N. Y. 121
du Pont, E. I., de Nemours & Co., Inc., Wilmington, Del. ..... Page 4 of Cover
Ford, J. B., Sales Co., The, Wyandotte, Mich 157
Frank, Paul, New York City 126
Gumm, Frederick, Chemical Co., Inc., Kearny, N. J. ..... Page 2 of Cover
Hanson-Van Winkle-Munning Co., Matawan, N. J. 122, 123
Harrison & Co., Haverhill, Mass. 142
Harshaw Chemical Co., The, Cleveland, Ohio ..... Page 6 of Cover
Jackson Buff Corporation, Long Island City, N. Y. 86, 87
Kocour Co., Chicago, Ill. 159
Lasalco, Inc., St. Louis, Mo. 153
Lea Mfg. Co., The, Waterbury, Conn ..... Back Cover
Maas and Waldstein Co., Newark, N. J. 141
MacDermid Incorporated, Waterbury, Conn. ..... Page 7 of Cover
Magnus Chemical Co., Garwood, N. J. 131
Magnuson Products Corporation, Brooklyn, N. Y. 128
Matchless Metal Polish Co., Chicago, Ill. 159
McGean Chemical Co., The, Cleveland, Ohio 132
Meaker Company, The, Chicago, Ill. 82
Michigan Buff Co., Inc., Detroit, Mich. 159
Midwest Buff Manufacturing Co., Cleveland, Ohio 130
Norton Company, Worcester, Mass. 147
Oakite Products, Inc., New York City ..... Page 3 of Cover
Seymour Mfg. Co., The, Seymour, Conn. 151
Stevens, Frederic B., Inc., Detroit, Mich. 88
Storts Welding Company, Meriden, Conn. 119
Stutz, George A., Mfg. Co., Chicago, Ill. 155
Sulphur Products Co., Greensburg, Pa. 155
Udylite Co., The, Detroit, Mich. ..... Page 5 of Cover
United Chromium, Inc., New York City 85
Zialite Corporation, Mt. Vernon, N. Y. 127

EXTREME "HIDING" POWER

Shorter Plating Time

Ultra Brilliance

SEYMOUR Bright Nickel produces a silvery white ultra brilliant deposit over unbuffed copper and brass and direct on raw steel —and does it in about half the time required by ordinary bright nickel. The saving in time, current and anode consumption will quickly justify your changing over to "Seymour."

It is an organic process free from promoter metal, stable, easy to control, and of excellent throwing power. It utilizes the hot Watts bath. Operating conditions are wide, pH 3.0 to 4.5. Only two replenishment solutions are needed, and no wetting out agent. Deposit is ductile, non-passive, highly corrosion-resistant. Any standard 99%+ nickel anode may be used, but we recommend our special-grain "Seycast" Nickel Anode. Full technical data on request.

SEYMOUR

BRIGHT NICKEL PLATING PROCESS

Eliminates Buffing or Coloring

THE SEYMOUR MFG. CO., 52 Franklin St., Seymour, Conn.

WANDERINGS OF THE HOT NOSE REPORTER

AT HOME: We overheard that Mr. Thomas Slattery is a perfect host. At the recent Washington-Baltimore Branch meeting, Tom not only provided front table seats and quick service, but also sang during the entertainment. His singing shows that he never misses choir practice — or does he?

The many friends of Carl Heussner will be glad to learn that he is now home, recovering from his recent operation. The surprising part is that Mrs. Huessner reports he is the ideal patient.

AT GRAND RAPIDS: A few comments heard about Grand Rapids Branch Educational Session and Banquet — Edgar Jones and Walter Pinner do not sound like Scotch names, but it is reported these two eating French pastry in the Pantland Hotel at 1:30 A. M. to get full value of the "minimum charge" check.

An excellent dinner and a fine show decreased our worries as to why we are invited up to Grand Rapids and then taken down in the basement for the afternoon session.

A variety of opinion existed as to whether or not Maurice Caldwell was in the doghouse. He and the Mrs. ate at separate tables and seemed quite happy over it. However, he was later seen dancing with her, although a few trips to the Governor's suite, temporarily occupied by Monte Pace's bar, could explain it.

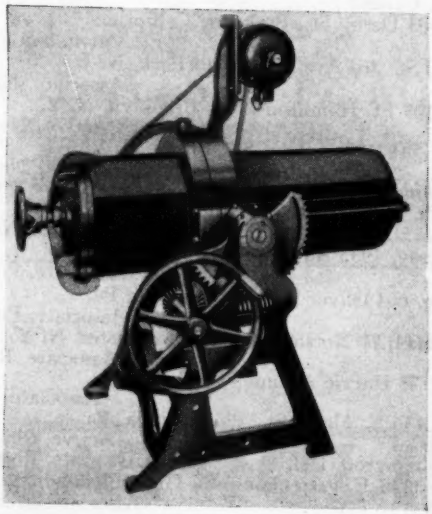
Although he lives in Grand Rapids, Earl Stadel claims that he came all the way home from Cleveland to attend the affair. There may be some truth in this, with his wife in Mexico on a pleasure trip.

AT CHICAGO: Somebody rates plenty of credit for the show and banquet the Chicago boys put on . . . Everyone seemed to have a swell time. The dinner and entertainment were great. How did that magician pull that string of razor blades out of his mouth? And get that guy's shirt? . . . The reporter would have been lonesome going up on the Twilight had it not been for Phil Brockway, the dapper boy from Esquire. The Detroit contingent was small this year. Eddie Fritz, Cleve Nixon, Morrie Caldwell did not make the trip. Jim Higgins laid up with a cold. Carl Huessner in the hospital. Bill Phillips drove up with the family and dropped in on his married daughter who lives in Chicago . . . . No poker game on the train. Nuts! . . . Saw a lot of old Chicago and Milwaukee friends . . . . Oscar Servis shook his fist at the poor reporter. Wonder what he meant? . . . Bill Erskin the boy from National Lock looking chipper as ever with Mrs. E. . . . Fred May was there and still arguing about golf. This summer the reporter promises to whale the stuffin' out of him — on the golf course. . . . Scotty Two Gun (Scotch and Sody) brought Mrs. Campbell — Joe Nook the Kalamazoo Baron was there with Mrs Nook and the Kirby's. Joe and Kirby went calling in their shirt sleeves. . . . Saw Chet Lancaster, the Springfield, Ohio, trush. . . . Bob Pederson and his pal Chouinard had a good time. They should have as they came all the way from Minneapolis. . . . Felt sorry to hear good friend Steve Zawadski's wife was rushed to the hospital before the meeting. . . . Ray Goodsell, supreme prexy, was there with his family and nephew. . . My gosh, the people that were there! Bob Steurnagle, and old friend Mr. Barnhardt of W. D. Allen. . . Walter Rusch . . . Phil Ritzenthaler. . . . Walter Meyer, the dapper editorial boss of "Metal Industry" . . . . Red Wilson, a Detroit boy, had the feature spot on the technical program. . . The reporter had a quart of bourbon at the banquet all for himself. Somebody swiped it. Lucky for the reporter. . . . Gentlemen prefer blondes, Bill Belke says. . . . If the reporter was not prejudiced in favor of Detroit he would say the Chicago meeting was the best ever. Anyway, it rates a tie with anything you can think of. . . . Why didn't Jim Stewart, the Duke of Bronson, come and bring his bodyguard, J. Wallingford Humphrey? The reporter is laying for that guy Humphrey. Been making nasty cracks. . . who was doing all the singing on the ninth deck. OK, then it wasn't singing. . . . Sorry Floyd Oplinger wasn't there or was he? Nobody started a crap game. . . . Saw Ted Wett for the first time in a coupla years. He looked swell. . . . Your reporter had a swell time, saw so many old friends he is still a little confused, and signs off with the hope that these Confucius stories are just about over with.

Lasalco Burnishing Barrels

V BELTS

MOTOR DRIVE



ROLLER BEARINGS

TURN WHEEL TO TIGHTEN COVER

BALANCED LOAD

SPIN HAND WHEEL TO RAISE OR LOWER CYLINDER

RUGGED FRAME

LASALCO, INC.

2822-38 LASALLE ST.

ST. LOUIS, MISSOURI

Membership Report

To February 1, 1940

ELECTIONS

S. Swigon, 2939 N. Lotos Ave., Chicago, Ill. — Chicago Branch
J. Melnitzke, 5050 Henderson St., Chicago, Ill. — Chicago Branch
S. Kurdenok, 2451 W. 47th Pl., Chicago, Ill. — Chicago Branch
G. Buchanan, 2225 Grand Ave., Chicago, Ill. — Chicago Branch
Joseph Miraglia, Cassidy & Maillard Ltee, 1575 Craig St., East Montreal, Canada — Active, Montreal Branch
W. S. Pankey, 1303 Derby St., Berkeley, California — Active, San Francisco Branch
Isidore Cross, 310 So. 3rd Ave., Highland Park, N. J. — Associate, New York Branch
Ernest Turtell, 3109 Ft. Hamilton Ave., Brooklyn, N. Y. — Active, New York Branch
Charles Cestagalli, 1821 Amethyst St., Bronx, N. Y. — Active, New York Branch
Jack Kaye, 474 Hinsdale St., Brooklyn, N. Y. — Active, New York Branch
Nicholas D. Suglia, 84-19 251st. St., Bellerose Manor, N. Y. — Active, New York Branch
William J. Hennessy, 1935 Antietam St., Pittsburgh, Pa. — Associate, Pittsburgh Branch
Glenn M. Herring, 604 Oliver Bldg., Pittsburgh, Pa. — Associate, Pittsburgh Branch
Bernard H. Schenkel, 77 North Water St., Rochester, N. Y. — Associate, Rochester Branch
Percy Corkfield, 173 Harvie Avenue, Toronto, — Associate, Toronto Branch
Charles K. Goss, 436 E. Alcott St., Philadelphia, Pa. — Active, Philadelphia Branch
H. A. Guiger, Wilmington, Del. — Associate, Philadelphia Branch
William W. Hall, 1143 E. Rittenhouse St. Gtn., Philadelphia, Pa. — Associate, Philadelphia Branch
Harry J. Lebharz, Jr., 17400 Third Ave., Aptol 304, Detroit, Mich. — Associate, Detroit Branch
Anthony J. Schullo, 1251 W. 58 Place, Los Angeles, Calif. — Active, Los Angeles Branch
Morris H. Balaban, Ware Metal Specialties Co., Ware, Mass. — Active, Springfield Branch
H. Corwin Miller, 1410 Parker St., R.F.D. #2, Springfield, Mass. — Associate, Springfield Branch
Merrill M. Thompson, 916 Alger St., S. E., Grand Rapids, Mich. — Active, Grand Rapids Branch
James H. Siedel, 518 Lakeside Dr., S. E., Grand Rapids, Mich. — Associate, Grand Rapids Branch
Vernon J. Twyning, 1150 Dunham, S. E., Grand Rapids, Mich. — Associate, Grand Rapids Branch
Richard G. Heeringa, 2944 W. Leonard St., Grand Rapids, Mich. — Active, Grand Rapids Branch
Joseph J. Duffy, Jr., 1000 Widner Bldg., Philadelphia, Pa. — Associate, Rochester Branch
Louis Piovarcy, 1029 Pembrook Rd., Cleveland Heights, Ohio — Active, Cleveland Branch

PEERLESS COMPOUNDS

RADIANT WHITE FINISH
PEERLESS TRIPOLI
PEERLESS WHITE STAR
PEERLESS EMERY CAKE

MANUFACTURED BY

GEORGE A. STUTZ MFG. CO.

Plating and Polishing Equipment and Supplies

1645 CARROLL AVENUE CHICAGO, ILL.

SAVE Buffing after chrome

Use

NATROLIN

"B-4 CHROME" CLEANER

before chrome--(Guaranteed)

SULPHUR PRODUCTS CO., Greensburg, Pa.

Wilfred Shipton
PRESIDENT

(Save your American Dollars to go to the A. E. S. Convention, Dayton, June 10, 11, 12, 13. John Feeley's doing it.)

Ralph M. Sasso, 366 Central Ave., New Haven, Conn.
Associate, Baltimore-Washington Branch
H. A. Schoonover, 591 Ridgedale Ave., Birmingham, Mich.
Associate, Detroit Branch
Carl A. Kilborn, 233 Circular Ave., Waterbury, Conn.
Active, Waterbury Branch
Charles A. Mosgrove, 37 Windsor St., Waterbury, Conn.
Associate, Waterbury Branch
Peter J. Gagnon, 429 So. Main St., Waterbury, Conn.
Associate, Waterbury Branch

APPLICATIONS

Joseph J. Visse, 1224-4th St., Dayton, Kentucky — Active, Cincinnati Branch
Mr. William J. Ehlen, 114 Woodside Place, Ft. Thomas, Ky.
Active, Cincinnati Branch
Thomas L. Fields, 2165 Clara St., Cincinnati, Ohio
Associate, Cincinnati Branch
Lester Lynch, 424 Sprague Road, Berea, Ohio — Active, Cleveland Branch
Fred J. Hill, 1947 W. 58th St., Cleveland, Ohio
Associate, Cleveland Branch
Roy Richard Kirkpatrick, 11321 Lake Avenue, Cleveland, Ohio
Associate, Cleveland Branch
Russell T. Holland, Trenton, Michigan — Associate, Dayton Branch
John A. Courtemarche, 815 King St., London, Ontario
Active, Toronto Branch
James Acierno, Fairchild Aviation Corp., Jamaica, N. Y.
Active, New York Branch
George Schore, Argo Lamp Corp. — Active, New York Branch
Chester M. Borlet, 1627 West Fort St., Detroit, Mich.
Detroit Branch
Harry E. Moser — Toledo Branch
Carl Yerger, Lustro Coated Sheets Co. — Active, Pittsburgh Branch
H. A. George, 7675 N. Rogers Ave., Chicago, Ill. — Associate, Chicago Branch
Arthur J. Hutchins, 67 Taylor St., Springfield, Mass.
Active, Springfield Branch
Arthur R. McNeil, c/o Red Gables, Stratford, Conn.
Associate, Bridgeport Branch
Frank J. Kalafus, 548 Bilyard St., Devon, Conn.
Associate, Bridgeport Branch
Anthony Desiena, 497 Grand St., Bridgeport, Conn.
Associate, Bridgeport Branch
Milton T. Vreeland, 106 Arcadia Ave., Bridgeport, Conn.
Associate, Bridgeport Branch
Charles Auburn, 249 New Haven Ave., Milford, Conn.
Associate, Bridgeport, Conn.
John J. Carr, 103 Highland Ave., Watertown, Conn.
Associate, Waterbury Branch
Thomas Lahey, 40 Vermont St., Waterbury, Conn.
Associate, Waterbury Branch
Anthony J. Maz, 52 Riverside Drive, Naugatuck, Conn.
Active, Waterbury Branch
Richard H. Peters, Coulter St., Oakville, Conn.
Associate, Waterbury Branch
H. E. Kilheffer, 603 Benton St., Harrisburg, Pa.
Associate, Lancaster Branch
Harvey C. Reynolds, 1809 Berryhill St., Harrisburg, Pa.
Active, Lancaster Branch
John M. Reynolds, 1809 Berryhill St., Harrisburg, Pa.
Active, Lancaster Branch